

DISASTER RECOVERY BUSINESS ASSESSMENT

FOR

HARBOR BAY COMPUTER ACCESS CENTER

INPUT



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INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

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Submitted to:

Harbor Bay Computer Access Center

By  
INPUT

March, 1990

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BUSINESS ASSESSMENT

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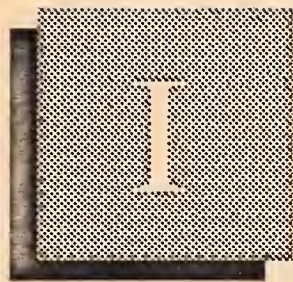


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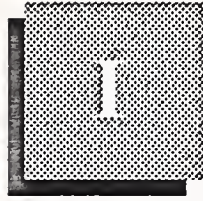
# Introduction/Overview





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## Introduction/Overview

The following research report has been prepared by INPUT in response to a request from Harbor Bay Computer Access Center (HBCAC) for a focused analysis of the disaster recovery (DR) services market. The content of the report is the exclusive property of HBCAC. However, the data collected in the research process may be utilized in other analyses prepared by INPUT.

This chapter presents the background relevant to the study, discusses the methodology used by INPUT for data collection and analysis, and gives an overview of the content of the remainder of the report.

### A

---

#### Objectives and Scope 1. Objectives

Harbor Bay Computer Access Center is a corporation formed by a consortium of three investors, including NTT. The firm is considering entry into the disaster recovery market. In support of its plans to enter the market HBCAC is seeking information on the pricing strategies, contract conditions and competitive offerings in the disaster recovery market. The study which follows was prepared by INPUT for HBCAC to meet the following specific objectives:

- Present a general overview of the market potential and driving forces for IBM-based disaster recovery services.
- Develop an overview of competing vendor offerings.
- Provide a typical pricing profile for disaster recovery services based on several different IBM platforms/configurations.
- Gain an understanding of how leading vendors in the business deal with the liability issues associated with disaster recovery contracts.

## 2. Scope

To meet both time and financial constraints, the scope of the study is limited to IBM-based disaster recovery services of the 43XX class and above. However, where information regarding DR services outside of the scope appeared to be relevant to the study's objectives, it has been included.

The study is focused on two primary competitors—SunGard and Comdisco. However, because of IBM's recent entry and likely impact on the market, information regarding IBM's offerings has been included wherever possible.

Finally, in accordance with the agreement with HBCAC, the study excludes the analysis of related services such as:

- Disaster recovery planning services
- Disaster recovery network services

## B

### Methodology

The fundamental data-gathering for the study was accomplished through telephone interviews conducted with the key vendors. The interviews were designed to obtain the information required to meet the study objectives. A copy of the primary interview is contained in Appendix A of this report.

In addition to telephone interviews, INPUT has incorporated information from its annual forecast of the information services industry markets. This information was particularly useful in testing the validity of vendor-provided data on market potential.

Finally, secondary research was conducted utilizing INPUT's library to gain insights into vendor strategies, vertical markets for DR services, and issues and trends that are likely to have an impact on the future of the DR services market.

## C

### Report Organization

The body of the report is organized into four chapters.

- *Chapter II: Current Market Considerations* gives INPUT's analysis of the current market structure, the forecast for potential growth, underlying driving forces, and an assessment of these factors as they apply specifically to the California marketplace.
- *Chapter III: Vendor Organization and Offerings* presents INPUT's assessment of the organization, strategies, relevant product offerings and client mix of the key market participants.



- *Chapter IV: Vendor Pricing* outlines the general pricing guidelines utilized by the key vendors, provides detailed pricing by sample configuration for a set of SunGard offerings, and presents INPUT's overall conclusions about DR service pricing.
- *Chapter V: Risk Management* focuses on contract terms and risk management aspects of the DR service business. It concludes with some recommendations for risk containment.

In addition to the body of the report, there are three appendixes. The first contains a copy of the vendor questionnaire. The second and third are brief industry profiles for SunGard and Comdisco.

## D

### Terminology

Throughout the report a number of terms and acronyms are utilized. The following partial list is provided as a reference:

- HBCAC - Harbor Bay Computer Access Center
- DR(S) - Disaster Recovery, or Disaster Recovery Services
- SRS - SunGard Recovery Services
- CDRS - Comdisco Recovery Services
- BRS - IBM's Business Recovery Services
- Hot site - A commercially shared and contracted alternate computer processing facility. A facility of this type houses the equipment and environmental support systems necessary to rapidly migrate a DR service customer's processing in the event of a disaster.
- Cold site - A commercial alternate computer processing facility which contains no computer equipment. The facility does, however, contain the necessary environmental (electrical, cooling, etc.) facilities for accepting client's equipment should something happen to normal operations.



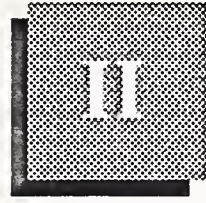


## Current Market Considerations









## Current Market Considerations

Since the initiation of IBM-based disaster recovery service in 1978, the market has remained consistently strong. This chapter describes the current market from several different perspectives, presents INPUT's views on growth over the next five years, and analyzes forces in the market which stimulate growth.

### A

#### Market Structure and Forecast

INPUT forecasts the revenue dollars for disaster recovery services as part of its annual forecast for the total U.S. information services market. Disaster recovery services are forecast as part of the processing services market in the "Other" subcategory. Exhibit II-1 shows how INPUT structures the market.

INPUT estimates that the total revenues for processing services in the domestic United States for 1989 were \$20.3 billion, and forecasts the revenue for the same market segment for 1994 to be approximately \$35.8 billion. Although the forecast varies slightly from year to year over the five-year period, this works out to be a compound annual growth rate (CAGR) of 12% for the five-year period.

The estimated revenues for DR services for 1989 were \$350 million for the domestic U.S. INPUT estimates that they will double over the five-year period to approximately \$700 million, a 15% CAGR.

Exhibit II-2 summarizes the 1989 revenues and five-year forecasts for the major sectors of the processing services market.

EXHIBIT II-1

### Market Structure Disaster Recovery Services

#### Processing Services

- Transaction Processing
- Utility Processing
- Systems Operations
- Other
  - Laser Jet Printing
  - **Disaster Recovery Services**
  - Electronic Vaulting
  - COM
  - CD ROM/Optical
  - Data Entry
  - Storage Services

EXHIBIT II-2

### Processing Services Forecast Summary

Market Sector	1989 Revenue	1994 Revenue	CAGR
Processing Services	\$20.3 B	\$35.8 B	12%
"Other" Subsector	\$1.8 B	\$3.3 B	13%
DR Services	\$350.0 M	\$700.0 M	15%

In reviewing these numbers it is important to understand some of the definitions that were used.

- DR service revenues, as forecast by INPUT, include revenues associated with the processing component of the service; i.e., monthly charges, testing fees, declaration fees, site occupancy fees, etc.

- The DR service revenues forecast above include recovery on all types of platforms; i.e., DEC, Tandem, etc.
- Electronic vaulting and off-site storage fees are forecast by INPUT as separate categories of service under the “Other” subsector, and therefore are not included in the forecasted revenues for DR service.
- The professional services revenues associated with DR planning are captured in INPUT’s forecast of the professional services industry.

Regardless of these somewhat subtle definitional issues, it appears quite clear that the outlook is for a healthy growth rate for DR services in the foreseeable future.

## B

### Market Driving Forces

INPUT believes that there are several forces operating within the environment which will keep the overall market for disaster recovery services healthy. The key factors are described below.

- *Increasing Executive Awareness*—Even without the recent natural disasters of the California earthquake and the hurricane of last fall, executives in general are becoming more aware of their dependency on information processing to conduct their ongoing business operations.

When the major function of data processing was to keep accounting records for the business, the real threat from a computer-related disaster was in fact less than it is for most businesses today. And... it was easier to ignore. As information systems have become integral to ongoing operations, it is much harder to ignore the dependency.

- *Growing Regulatory Pressure*—Increasingly, both federal and state regulators are forcing management to demonstrate “due diligence” in the form of a demonstrable disaster recovery plan. The pressure is coming first in the financial services industry, but can be expected to spread to other industries rapidly.

Furthermore, auditors are increasingly uncomfortable in dealing with situations where backup plans don’t exist, or those that do are at best of questionable quality. Some of these firms have actually gone into the DR planning services business.

- *IBM’s Endorsement*—Like it or not, IBM’s entry into the DR services business has a legitimizing effect. Couple this with IBM’s ability to market the concept, and there is no doubt that general receptivity to the product will increase.
- *New Market Opportunities*—A number of factors are at work which facilitate the opening of new markets. The primary factor is the inte-



gration of on-line and real-time processing directly into the critical operations of a growing number of industry sectors. This has been apparent in banking and finance for some time. However, other industries are quickly becoming as dependent on on-line transaction processing as financial services. For example:

- The move to just-in-time (JIT) inventory management in manufacturing means that systems must be up or the business is down. Apple Computer relies on less than a two-day inventory to keep manufacturing going. And numerous other examples could be cited.
- Likewise, the fully automated factory concept dictates that systems must be up or shipments cannot be met.
- Retail and wholesale distributors are relying on increasingly complex electronic data interchange schemes to minimize their inventory and meet growing customer demands for automatic reordering. These schemes are inevitably computer-dependent.
- Service organizations are increasingly committing both the quality and timeliness of the offerings to computer systems.

The list of examples is large, but the point is that the further imbedding of technology in the business operations and strategies of entire U.S. industry sectors should be a powerful force for market receptivity to DR services.

Exhibit II-3 summarizes the primary driving forces for continued growth for DR services in the U.S. market.

EXHIBIT II-3



Finally, as the market moves increasingly to recovery of on-line transaction processing systems, many new opportunities will be created for DR service vendors in the networking, vaulting, and planning areas. The



market is clearly solid, and the 15% CAGR for the core product offering is, if anything, conservative.

## C

### The Market for IBM-Based Disaster Recovery Services

Though the overall market information presented in Sections A and B above sets the context for the health of the business, the focus of this study is primarily related to DR services for IBM-based environments of the 43XX class and above. INPUT directed several specific questions to interviewees on the subject, and gathered additional data from its internal library and other sources. The material which follows gives INPUT's analysis of that particular market area.

#### 1. Saleable Accounts—U.S.

Based on the interview data, there is a variety of impressions regarding the total number of saleable accounts in the IBM 43XX class and above in the U.S. These range from a conservative 12,000 to one number reported in the literature at 18,000. Although there is no way to certify this, INPUT believes the larger number to include the 9300 series of systems. Exhibit II-4 gives SunGard's and Comdisco's estimates for both the U.S. and California.

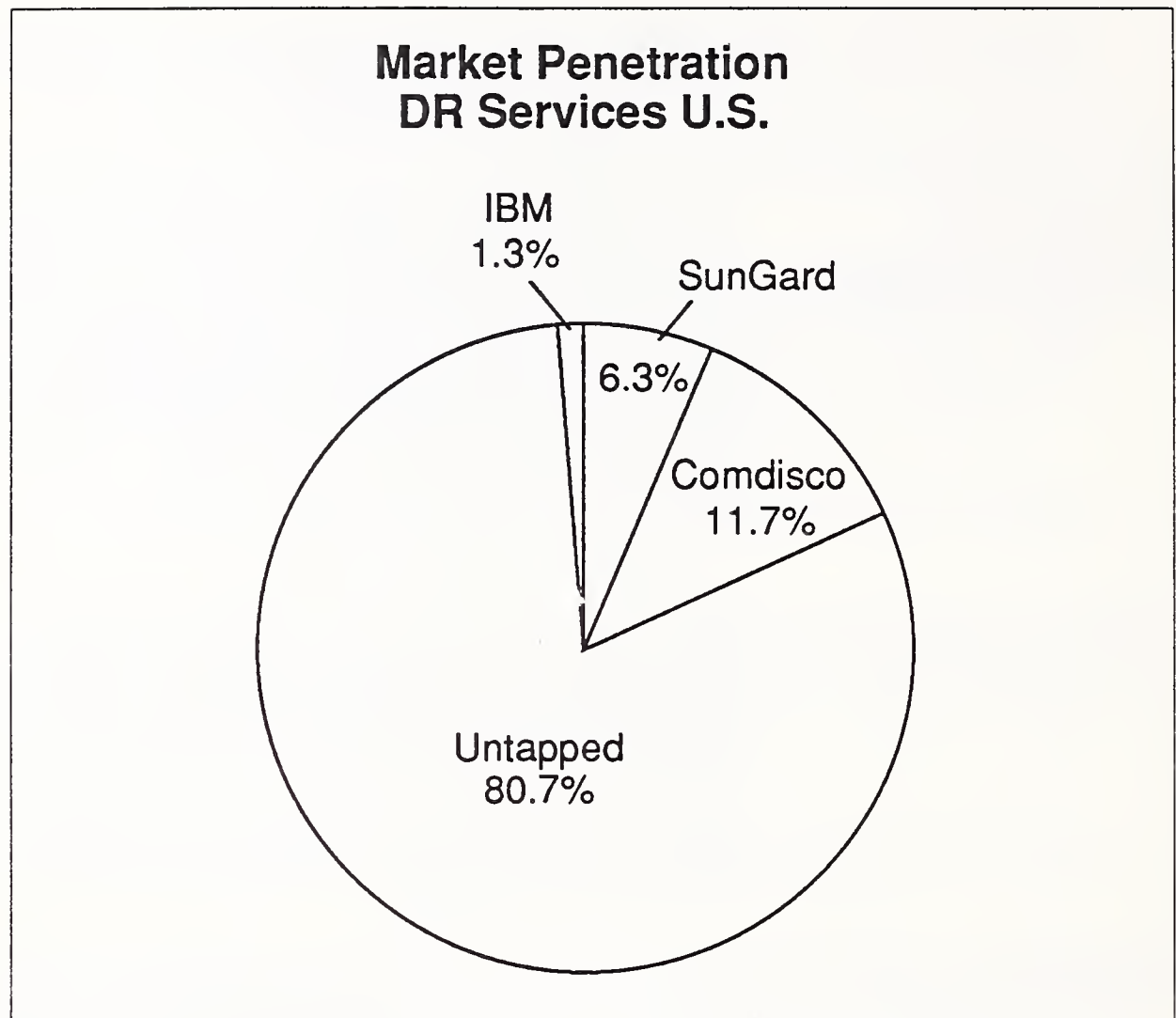
EXHIBIT II-4

#### Saleable Accounts IBM 43XX and Above

Estimating Vendor	U.S.	CA
SunGard	12,000	1,900
Comdisco	15,000	1,600

If we utilize SunGard's more conservative number for the total U.S. market size and the data gathered from the interviews regarding the number of customers that each vendor has in the U.S., INPUT believes the total market penetration to be approximately 19.2%. Exhibit II-5 shows the penetration of each vendor in the U.S. market.

EXHIBIT II-5



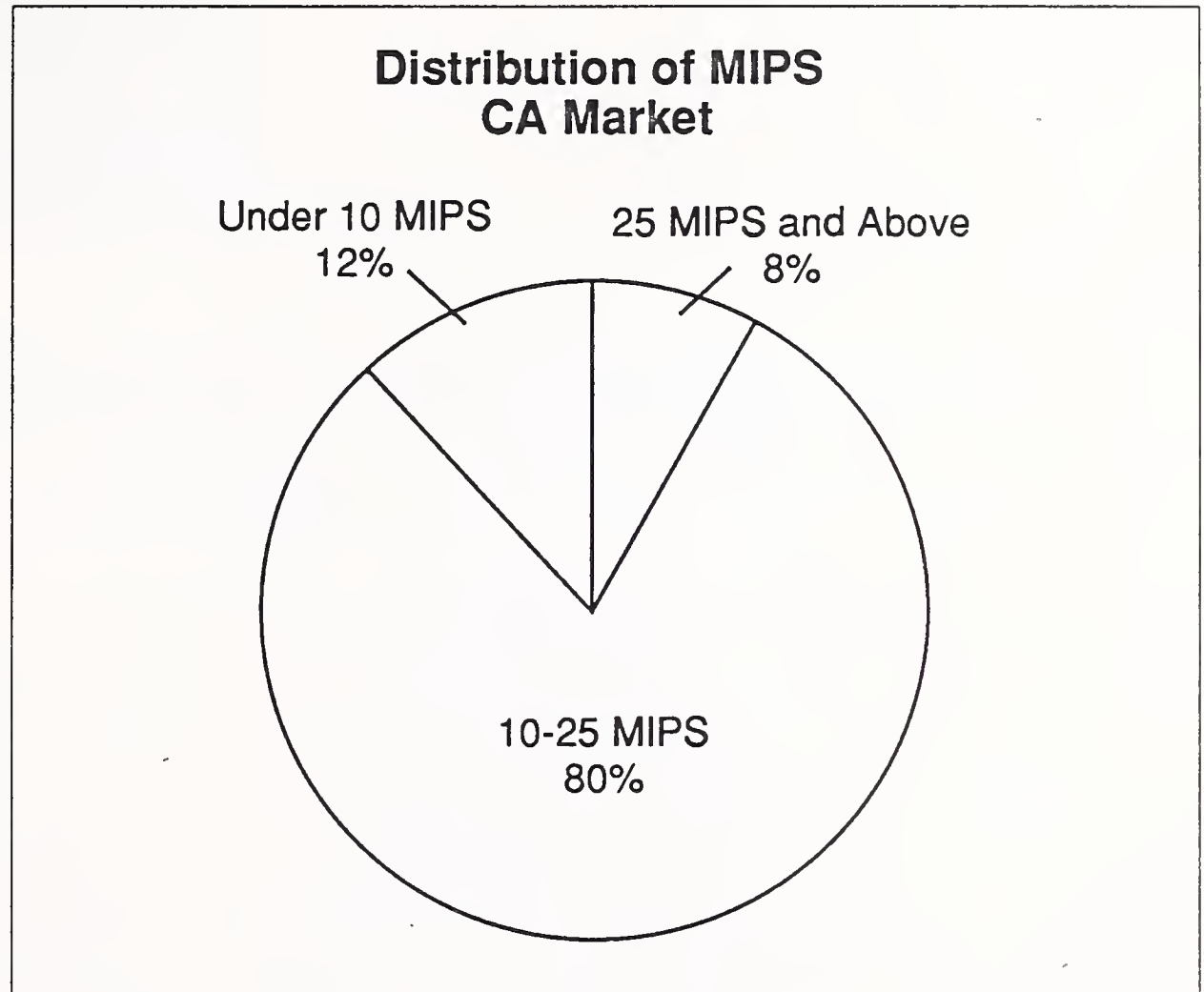
## 2. California Market

Again using the SunGard numbers from Exhibit II-4, the number for the California market is approximately 1,900 installations for IBM 43XX class and above sites. SunGard estimates that of this total, approximately 1,350 are in Southern California and the remainder are in the north. Based on data gathered during the interviews, along with other information available to INPUT, the distribution of these systems in terms of their power (MIPS) is shown in Exhibit II-6.

During the interview process, INPUT obtained information that should be of specific interest to HBCAC. Although INPUT does not know how many accounts IBM has in the Northern California area, the interview data clearly indicates that SunGard and Comdisco probably have about 44 clients in the region. If IBM has no larger share than it does nationally, the numbers indicate that penetration in Northern California is less than half of the national average.

SunGard indicates that over 40% of this total for both companies were for configurations in the 15 MIPS or larger category. This distribution to the high end probably reflects a marketing strategy of targeting the high end, rather than the actual distribution of saleable sites in the region.

EXHIBIT II-6

**D****Market  
Considerations—  
Summary**

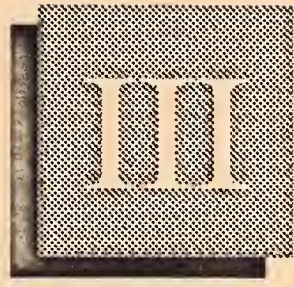
The fundamental conclusion is that the market is healthy for IBM-based DR services. Even though the annual growth rate for IBM mainframes appears to be running a 6 - 8% annualized rate:

- Revenue growth for disaster recovery services in general is forecasted to be growing at a healthy compound annual growth rate of 15%
- All the driving forces underlying the market indicate a continued support for at least that level of market growth
- INPUT's rough estimates of the market penetration suggest that somewhere in the neighborhood of 80% of the potential existing market has not been tapped

The prospects are even better for California. With the primary vendors focused primarily on the East, the opportunities for new competition are probably better. Although it was not possible to calculate a California penetration level due to the fact that INPUT was not able to obtain information on the number of IBM accounts, it is apparent that the penetration in California is lower than in some other regions of the country.



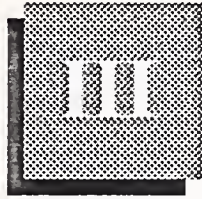




## Vendor Organization and Offerings







## Vendor Organization and Offerings

This chapter focuses on the key business characteristics of disaster recovery services vendors. The emphasis is on marketing and sales, disaster recovery delivery capability, and the business and client mix. INPUT has included its analysis of each firm's strategy as part of the discussion.

Consideration is also given to some differences in business philosophy between the vendors and the overall characteristics of their contracts. Chapter V, *Risk Management*, addresses contract concerns in much more detail. Appendixes A and B, which contain INPUT's company profiles for SunGard and Comdisco, give an overview of each firm's history and financial characteristics.

### A

#### Organization—Sales and Marketing

##### 1. SunGard

SRS's sales is organized into three regions; East, Midwest and West. Based on the interviews, INPUT believes that the total count for active sales personnel is 53, split between two categories.

- Twenty-seven "sold" account managers who focus on the service and renewal of existing accounts
- Twenty-six district or "new" account managers who focus on bringing in new business

These front-line representatives report to either Regional VPs or, recently, Directors. The average span of control has decreased from 8-10 per sales manager to 5 per manager in the last year. The VPs report to an Executive VP, who in turn reports to the CEO. Of all the new sales personnel added, two-thirds have been in the Eastern region and one-third in the Midwest. None have been added in the Western region.

A primary shift in SunGard's market strategy is reflected in recent changes in the mix of the sales staff.

- SunGard “sold” account management has increased from 11 to 27 in the last 2 years, reflecting a strategy shift from growing market share to maintaining and enhancing profit opportunities with existing accounts.
- The staff focusing on new accounts has increased from 19 in 1988 to 26 in 1990. To a large degree these have been more junior people. Consequently, in the last six months, SRS has added a layer of four supervisory sales managers.

There has been a shift in emphasis from new account development to committed revenue at SunGard since 1987. Prior to 1987, sales personnel were focused on adding seven new accounts per year. They are now focused on committed revenue.

SRS’s turnover for each of the last two years has been approximately 40%. This fallout has been heaviest in senior salesmen. Of the top 10 revenue-producing new account salesmen for the last two years, only four remain.

The marketing organization at SRS consists of one product manager for IBM-based offerings and one for “all other” products and services. In addition to the product managers there is an Advertising Manager and a Telemarketing-Contact Manager. Although there were more people in marketing in the 1987- to early-1989 time frame, these individuals have been reassigned to direct sales.

## 2. Comdisco

CDRS has 58 salespeople, who handle both new and “sold” or renewal accounts. On the surface, and in comparison with SunGard, this would appear to be a small number, considering that Comdisco has over twice as many accounts. However, the dedicated sales force is aided by a leasing sales force of 60 which provides leads and sales assistance. Sales is organized under three senior VPs, each responsible for a region; Northeast, Midwest, and South Central and West.

There is no question that Comdisco’s leasing sales force is an asset. In addition to identifying prospects, these field people provide both presence and customer support to existing accounts. It is interesting to note that SunGard has launched a counter strategy by allying with Sorbus, using Sorbus’ representatives to obtain entry to prospects.

CDRS has an estimated marketing staff of 10-12, although CDRS tends to designate regional staff as “marketing” on occasion, adding to this basic count. The usual functions are represented in the permanent marketing team.

CDRS turnover is indicated to be 20-30%, with most resignees going to leasing sales jobs with competitors.



### 3. IBM

To date, IBM's BRS offering has been sold through the existing sales force, which in theory would give them a sales force of around 5,000. Interviews with SunGard and Comdisco indicate that IBM is not nearly as polished in its approach to DR service sales as themselves. However, INPUT believes that if IBM sees the business as important, sophistication will develop over time.

IBM's Business Recovery Services utilize the support functions of its parent organization, the National Service Division, for handling its marketing and packaging approaches. Key marketing strategies to date have included:

- Leveraging IBM's reputation for providing excellent support from the point of view of hardware, planning and support for traditional clients who have experienced major outages and have not been subscribers to other forms of DR service
- Promoting IBM's capabilities at planning its own disaster recovery backup
- Utilizing the national account structure for targeted market entry

### 4. Summary

Although the current strategies differ, in general the sales and marketing organizations of Comdisco and SunGard are comparable. Exhibit III-1 summarizes the key parameters of each organization.

EXHIBIT III-1

Comparison of Sales/Marketing SunGard and Comdisco		
Characteristic	SunGard	Comdisco
Sales Organization	Regional (3)	Regional (3)
Dedicated Sales Staff	53	58
Emphasis	Profit/Revenue	Growth
Sales Turnover (Percent)	30 - 40	20 - 30
Marketing Staff	4 - 6	10 - 12

**B****Disaster Recovery  
Center  
Characteristics**

This section covers the capabilities offered by the major vendors and is focused in accordance with HBCAC's request on hot-site facilities. No attempt has been made to discuss the telecommunications facilities offered at various sites, although mention is made of these facilities where they appear to be critical to the strategy of the vendor in terms of its internal capabilities to support one site from another.

**1. SunGard Facilities**

SunGard's operation is organized into four North American recovery complexes. Recovery centers are located in Toronto, Philadelphia, Chicago and San Diego. The Toronto site is operated jointly with STM in Canada. Exhibit III-2 shows the IBM equipment available in SunGard's major centers.

EXHIBIT III-2

**IBM Equipment at SunGard Centers**

Recovery Center	Equipment
Philadelphia	IBM - 3090 - 400E IBM - 3090 - 200E IBM - 3081K
Chicago	IBM - 3090 - 200E IBM - 3081K
San Diego	IBM - 3090 - 200E
Toronto	IBM - 3090 - 200E

Other equipment located at SunGard centers is presented in Exhibit III-3.

## EXHIBIT III-3

**Other Equipment at SunGard Centers**

Recovery Center	Equipment
Philadelphia	Tandem - 4TXP DEC - VAX8800 Stratus IBM AS/400
Chicago	Tandem - 4VLX
San Diego	DEC - VAX8700 (2) Stratus

**2. Comdisco Facilities**

Comdisco's original strategy was to create numerous facilities, presumably based on the concept that a local location for testing was a key factor in producing sales. The cost of that strategy, coupled with the advent of truly effective telecommunications facilities, has caused Comdisco to reorganize its delivery facilities into two classes.

- *Computer Recovery Facilities* —Housing traditional hot-site hardware, including CPUs, disks and major telecommunications links
- *Business Recovery Centers* —Housing the "people-oriented" products and services, including such capabilities as electronic vaulting and local or user-owned telecommunications equipment

Having invested heavily in its intersite telecommunications facilities, Comdisco is able to provide local access for testing through this approach without incurring the capital expense of building as many major facilities as its earlier strategy would have called for. In addition, this approach provides a way of balancing the load in terms of dealing with a concentrated disaster in a given local area.

The key IBM equipment available in Comdisco's six major hot sites is described in Exhibit III-4.

In addition to these facilities, Comdisco has a facility in Toronto and joint venture facilities in the U.K. and France.

EXHIBIT III-4

**IBM Equipment at Comdisco Centers**

Recovery Center	Equipment
Woodale (Chicago)	IBM 3090 - 300E IBM 3090 - 180S IBM 3083 IBM 4381
San Ramon (CA)	IBM 3090 - 200E IBM 4381
Dallas	IBM 3090 - 200E IBM 3081K
Carlstadt (NJ)	IBM 3090 - 600S IBM 3090 - 200E (2) IBM 3090 - 400E IBM 4381 (2)
North Bergen (NJ)	IBM AS/400 IBM System 38
Bridgeport (NJ)	IBM 3090 - 200E IBM 4381

**3. IBM Facilities**

IBM, as might be expected, has entered the market with an impressive array of facilities. Initially targeting the top end of the market, IBM has focused on the 3090 class systems, and like both SunGard and Comdisco has emphasized the eastern half of the United States. IBM has divided its services into two categories:

- *IBM Business Recovery Services—Large Systems* is focused on the 3080 and 3090 class customers and services are provided from Tampa and Franklin Lakes. The configuration for the large-scale operation is impressive, focusing on the IBM 3090 - 600E. 3090 “S” class facilities are available as well.
- *IBM Business Recovery Services—Midrange Systems* is for those customers who require an AS/400 mainframe for backup. This service is based on installed hardware in Franklin Lakes (NJ), Tampa, Detroit,



Atlanta, Washington, Los Angeles, Chicago and Philadelphia. One of the unique aspects of this service is that IBM will commit to ship (under option) a complete hardware configuration to a site of the subscriber's choice in a disaster situation.

#### 4. Summary

In general, all competitors have developed extremely effective facilities. From the perspective of HBCAC however, there is an important fact to note. The focus has been and continues to be on the East Coast. Only Comdisco has a center in San Ramon. INPUT believes, however, that IBM will move to the West soon, perhaps to the San Jose or Phoenix area. INPUT would bet on San Jose, despite the earthquake risk, because of IBM's existing facilities in that part of the Bay Area.

### C

#### Business/Client Mix

Both SunGard and Comdisco have concentrated on the country's largest business institutions; Comdisco's strategy is aimed at the Fortune 1000, and SunGard's at the Fortune 500. INPUT's research indicates that the mix of industries is relatively comparable between the two organizations. The following sections comment on each firm's client base.

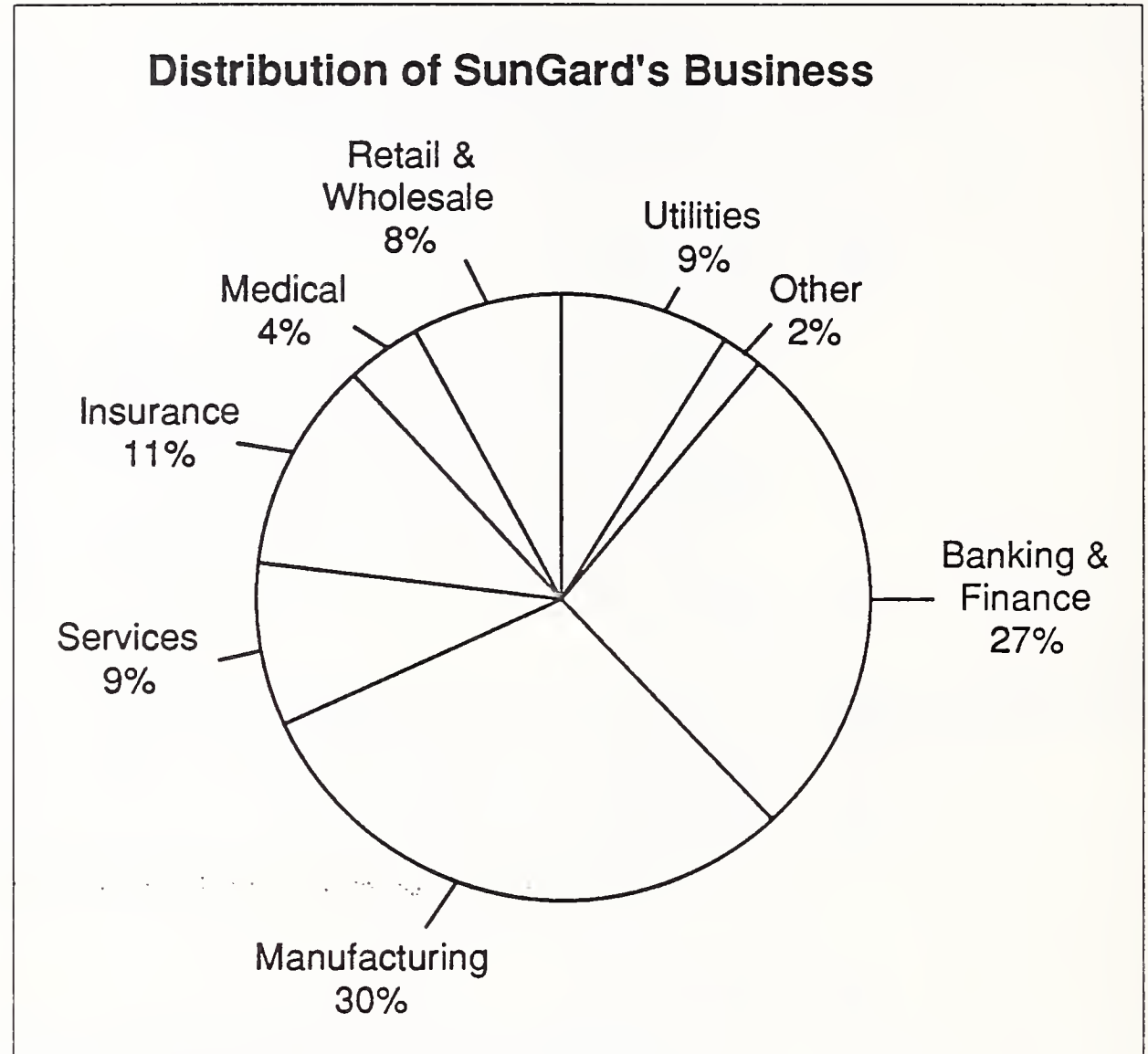
##### 1. SunGard Client Mix

SunGard got its start by bringing together a group of Philadelphia banks to initiate its business. Banking has always been a strong point with SunGard, and it has also grown in related industries, such as insurance. INPUT estimates that SunGard currently has approximately 750 clients. The distribution by industry is indicated in Exhibit III-5.

Despite the heavy early emphasis on banking, SunGard's largest market share has shifted to the manufacturing sector in recent years. INPUT believes there are at least two reasons for that shift:

- A heavy targeting of the New York metropolitan area on the part of Comdisco, which has slowed SunGard's growth rate in the biggest banking and finance market
- A focus on manufacturing companies whose JIT and other on-line systems strategies has made them more sensitive to computer recovery requirements.

EXHIBIT III-5



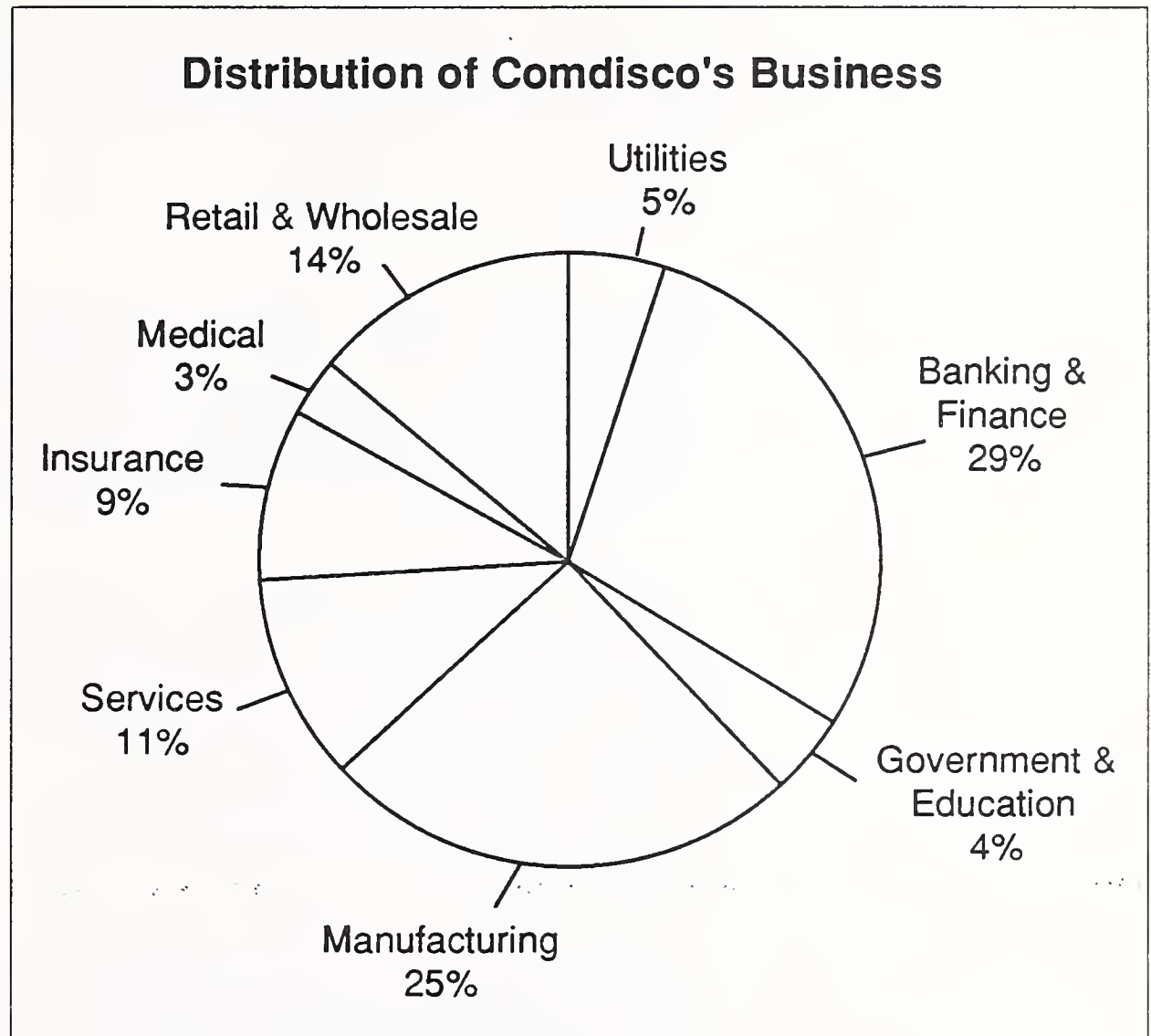
## 2. Comdisco Client Mix

Comdisco currently has in excess of 1,400 DRS customers. About half of these customers have begun the service within the last three years, reflecting Comdisco's recent strategy of gaining market share at a somewhat reduced margin. On average, the installation size of the customers is smaller than SunGard's, but the mix is certainly comparable. Exhibit III-6 shows Comdisco's mix by industry sector.

Comparing this mix to SunGard's points out some of the differences between the two firms' recent strategies.

- Comdisco has a larger percentage from the wholesale and retail sectors, where installations tend to be smaller and pricing needs to be lower to win the bid.
- Comdisco has been a little more effective in the government marketplace, where pricing is the primary factor.

## EXHIBIT III-6



### 3. Summary—Client Mix

With the exceptions noted above, the mix of clients—from an industry sector viewpoint—is essentially the same. Although there was no “mathematical” evidence gathered during the research which would verify the statement, soft evidence indicates that in general the IBM sites being backed up by SunGard are probably larger on the average than those being backed up by Comdisco.

From a geographic perspective, both firms are heavily focused on the East Coast, as is the highest density for traditional DR service prospects. Both firms’ tradition, target market segments, and recovery sites all reflect their origins in that area of the country. In the West, Comdisco seems to have the edge at the moment, but recent deals—including SunGard’s success with Intel (a major IBM supplier)—are reinforcing SunGard’s position in the West.

Finally, Comdisco’s strategy of deep discounting (Alex Brown & Sons estimates that Comdisco’s operating margin plunged from 20% in 1987 to 9.3% in 1989) has certainly gained it market and geographic share, but is forcing it to reconsider both its marketing and delivery strategy.



## D

## Overall Contract Considerations

This section briefly covers some of the basic characteristics of DR service contracts. The issues of managing the risk associated with offering DR services and the roles that contracts play in containing the risks will be addressed in Chapter V.

### 1. General Contract Terms

There is no question that everyone in the industry targets contract duration for a period of five years. SunGard reports that the typical contract runs between 3 and 5 years, but it has written contracts for up to 7. Comdisco reports writing contracts for 2 to 5 years, and to INPUT's knowledge has not written any of greater length, although its pricing algorithms would allow for the creation of such contracts.

As will be discussed in Chapter IV, both vendors' contracts call for a schedule of disaster notification fees and site utilization fees. Similarly, both offer access and availability to sites on a 24-hour-a-day, 7-day-a-week basis. However, there are slight differences in how these fees are dealt with by SunGard and Comdisco.

A comparison of key elements of the DR service contracts of Comdisco and SunGard follows:

- *On-Site Equipment* —Both SunGard and Comdisco permit customer on-premise equipment. Charges and support for this equipment vary amongst individual contracts, but in general, customers are responsible for the selection, acquisition and installation of this equipment and are charged on the basis of the square footage occupied. In both SunGard's and Comdisco's cases, the vast majority of customer-owned on-site equipment is to support telecommunications.
- *Disaster Recovery Testing* —All contracts "require" some minimum annual level of customer on-site testing. This approach assures feasibility of recovery, and forces modification of the customer's DR plan as the customer site evolves. The minimum requirement is usually for two to three test shifts per year.
- *Site Occupancy* —SunGard's contracts require a minimum of six weeks' occupancy in hot sites. The minimum in a cold site is six months. Site availability varies by contract. SunGard contracts specify that sites are immediately available upon formal disaster declaration by the customer. However, in the event of multiple declarations, the contracts specify that sites may have to be shared until additional CPUs, etc., are installed.

The contract specifications for occupancy are somewhat different for CDRS's clients. CDRS, like SunGard, specifies immediate availability. However, in the event of multiple disasters, CDRS controls site



occupancy on a “first-come, first-served” basis. CDRS’s terms for site occupancy are 6 months for a hot site and 1 year for a shell or cold site. Although INPUT has been unable to confirm it through Comdisco, INPUT does believe that recently CDRS has written some contracts which guarantee a customer occupancy in the event of multiple disaster declarations whether that customer is “first” declarer or not.

- *Roll-Over Clauses* —Both CDRS and SRS contracts contain renewal roll-over clauses. These are typically for the full term of the original contract, and in theory require the customer to notify the vendor, usually six months in advance, of intent to terminate. It’s INPUT’s view that while this clause exists, the vendors are incented by possible increases in contract size and good customer relations practice to work positively on renewals, rather than hope they’ll “slip by.”
- *Pricing Changes* —By contract, customers are allowed to increase the scale of their coverage throughout the duration of the contract. In addition, the contracts are written with automatic price increases for existing services of between 6% and 8% annually. As mentioned in the pricing section, the result of this combined effect is to increase contract value for a typical five-year contract by 150 - 200%.
- *Out-Clauses*—There are almost always out-clauses specifying penalties, etc. Typically, these out-clauses require the payment of the difference between original and actual contract term. Usually out-clauses deal with such issues as DP center closure, mergers and acquisitions by a third party, or cancellation after a fixed period, with a formula dictating cancellation fees. Some typical examples of out-clause situations follow:
  - If the customer company is involved in a merger and/or acquisition and the surviving corporation already has a DRS vendor, the original customer company may be relieved of the contract obligation. If not, penalties apply.
  - If a customer company data center is closed and a substantial amount of the processing is either terminated or moved to another center, the contract may be cancelled, but penalties may apply.
  - SunGard contracts specify that if SunGard is acquired by a company which could be shown to be in a competitive or threatening business position with a SunGard client company, the client company may be relieved of its contract responsibility.

There are also a number of short-term situations under which the customer may decline a contract. The most common of these is the failure of SunGard to successfully conduct the initial recovery test.

Exhibit III-7 compares SunGard and Comdisco on key contract points.

EXHIBIT III-7

### Comparison of SunGard and Comdisco Key Contract Areas

Contract Issue	SunGard	Comdisco
Contract Duration	2 - 5 Years, Up To 7	3 - 5 Years Typical
Disaster Notification	Fee Upon Notification	Fee Upon Notification
Recovery Testing	2 - 6 Shifts	4 - 6 Shifts
Site Occupancy	Hot Site - 6 wk. Min. Shell - 6 mo. Min.	Hot Site - 6 wk. Min. Shell 1 yr. Min.
Roll-Over Clauses	Yes - 6 mo. Notice	Yes - 6 mo. Notice
Pricing Changes (No Penalty)	6 - 8% Permitted/Year Configuration Growth	6 - 8% Permitted/Year Configuration Growth
Out-Clauses	Yes - Vary	Yes - Vary

While all of these areas are subject to individual contract negotiations, INPUT believes that on the basis of the research conducted, the items listed in Exhibit III-7 are representative of the typical contract for large-scale IBM services.

## 2. Sensitive Contract Areas

Price aside, the two most sensitive contract areas deal with limitations of liability and the treatment of multiple disaster declarations. As might be expected, these are also the areas where it is most difficult to get accurate information. Although INPUT was unable to obtain detailed information in these areas, a number of the respondents were willing to discuss the general philosophy for handling these situations.

### a. Limitations of Liability

Both SunGard's and Comdisco's standard contracts contain limitations of liability clauses which attempt to limit their financial liability to "breach of contract and other negligent and intentional acts." In essence,

their contracts are structured to protect them against claims of business losses from clients or third parties who suffer damages due to the failure of a particular DR service client to recover.

Both companies feel confident that this type of clause provides adequate protection, and INPUT knows of no cases where the clause has been tested in an actual DR failure situation. One interviewee indicated that prospects frequently question the clause, but in effect, it has become an industry standard—at least until court precedent provides a different interpretation.

### **b. Multiple Disaster Declarations**

As mentioned earlier, the two companies treat simultaneous multiple disaster declaration situations somewhat differently. SunGard's contract specifies that sites may have to be shared in the event of multiple declarations, while Comdisco's specifies a first-come first-served situation.

As mentioned earlier, INPUT believes that some contracts have been written by Comdisco which "guarantee" occupancy for a customer, whether first declarer or not, in the event of a multiple disaster. It's not clear how this situation is handled in terms of retrofitting other customers' contracts which rely on the same site.

## **E**

### **Other Products and Services**

Although the primary focus of this study was on pricing and risk containment for IBM-based DR services, some knowledge of the related products and services should be useful in considering the overall strategies of the competitors' positions in the DR services business. This section provides a brief overview of these related products and services, as well as INPUT's insights into likely future product strategies.

#### **1. Electronic Vaulting**

Both SunGard and Comdisco provide electronic vaulting services. Comdisco introduced its form of the service in 1988. Fundamentally, the service provides enhanced backup recovery capability to customers that record and process their transactions on-line. Banks, brokerage houses and even manufacturing firms are specific targets for this kind of service. On-line transactions are recorded at the client's host site and are simultaneously backed up at CDRS's site in Carlstadt (NJ). SunGard's implementation, Sunvault, provides essentially the same capability, but the technology utilized in its implementation limits clients to within 100 miles of a supported site.



## **2. Fixed and/or Mobile Satellite Services**

These services offer customers the opportunity to bypass telephone switching equipment in the event of major regional disasters.

## **3. Mobile Computer Recovery Services**

Comdisco's COMROC mobile computer recovery center provides a customer on-site shell. Essentially, Comdisco agrees to set up a cold site on a customer's property within one week of a declared disaster. SunGard does not offer a comparable service. However, SunGard does provide "equipment" packs for installation at a customer's facility on short notice.

## **4. Disaster Recovery Planning and Management Tools**

Comdisco's ComPAS is a disaster recovery software product that utilizes artificial intelligence and expert systems technology to assist customers in developing, testing and maintaining disaster recovery plans. SunGard's equivalent product is called Disaster Plan 90, and is provided through its EDP Security subsidiary. The general impression is that SunGard's product is superior in this area.

## **5. Remote Testing**

Both SunGard and Comdisco provide customers with the capability of running their disaster recovery tests from their own locations through the use of local equipment and communications networks. While the implementations differ, the products are equally valued, particularly for customers who are geographically remote from their designated hot site.

## **6. Disaster Recovery Planning Services**

Comdisco's Disaster Recovery Contingency Service provides consulting services to prospects and existing clients on how to set up and manage a disaster recovery plan. SunGard offers comparable services through its Harris-Devlin Associates subsidiary.

INPUT anticipates that both SunGard and Comdisco's future products and services will be increasingly telecommunications-oriented. The electronic vaulting services are probably typical of the types of extensions that we can expect to see from both companies in the future. The provision of capabilities which will permit more remote testing for clients is also a likely product area. This type of extension not only provides for additional network revenues, but increases the potential "capacity" of existing sites by reducing the set-up and knock-down time required for on-site testing.



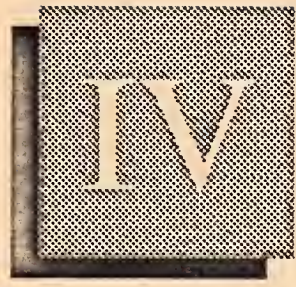
Exhibit III-8 compares the supplementary services of both SunGard and Comdisco.

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**EXHIBIT III-8****Supplementary Services  
SunGard & Comdisco**

Contract Issue	SunGard	Comdisco
Electronic Vaulting	Yes	Yes
Fixed/Mobile Satellite	Yes	Yes
Mobile Shell	No	Yes
Software Planning Tools	Yes	Yes
Remote Testing	Yes	Yes
DR Planning Services	Yes	Yes



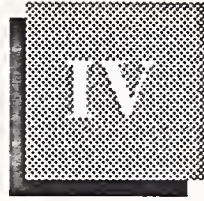


## Vendor Pricing









## Vendor Pricing

This chapter presents the results of the research on pricing of disaster recovery services. Detailed pricing information was obtained for the SunGard offerings. In general, INPUT's secondary information and the direct interview data from Comdisco indicates that Comdisco's standard pricing is somewhat less than SunGard's, with the range being between 0 and 15%. Until now, SunGard has essentially set the standard with Comdisco following its lead. The entry of IBM into the market could change this position, but it's still too early to tell.

This chapter covers general pricing considerations vendors' philosophies, and detailed pricing for typical configurations, and presents INPUT's general conclusions on pricing for these services. Wherever possible, specific information has been provided on Comdisco's and IBM's pricing compared to SunGard's.

### A

#### General Pricing Considerations

##### 1. Pricing Structure

Pricing for DR (disaster recovery) services is essentially broken into two major elements: long-term contract fees for maintenance of the right to use the service, and site declaration/utilization fees.

- Long-term contract fees are **universally** based on component pricing. Early on, SunGard priced on a "standard configuration" basis, but shifted to component pricing in the early 1980s in light of Comdisco's approach, and to provide greater flexibility in the utilization of its installed configurations. In addition to guaranteeing access to the configuration specified in the contract, fees for custom on-site hardware and test-shifts are also included in this category.
- Declaration and utilization fees come into play when a customer of the DR service actually declares an emergency, and usually fall into three categories: a disaster declaration fee, hot-site daily fees and cold-site daily fees.

- Fees for on-site equipment are not uncommon. In most instances the price is calculated on the basis of the square footage utilized, and the customer is responsible for providing the equipment, installation and any on-site maintenance.

It is important to note that standard pricing for either classification of fees is not published by any vendor. In addition, discounting from standard price for long-term contract fees is a standard practice in the industry. The approach of the two primary vendors regarding this practice will be discussed later in the chapter.

## **2. Pricing Philosophy/Practice**

SunGard's pricing philosophy reflects its current primary business objective of profit versus market share. This represents a change from SunGard's traditional growth goals. As discussed in Chapter II, Section A, SunGard has weighted the population of the sales force to place an emphasis on renewal of existing accounts with strong profit potential. Likewise, SunGard has placed emphasis on large-site backup, where it believes that the best margins can be made. It is INPUT's observation that despite the emphasis on profitability, competitive pressures still force SunGard to discount from list about 30 - 40%.

For the last several years, Comdisco has focused on gaining market share. As pointed out in Chapter I, it has doubled its number of customers by operating with a list price which is 15% below SunGard's and frequently offering deeper discounts.

Although no direct data is available, INPUT believes that IBM's list prices are approximately 10% above SunGard's. This would make the total range between the three in the neighborhood of 25%.

For all three companies, pricing practices are set on a national schedule and varied on a case-by-case basis, usually due to competitive pressures. Discounts over 30% off of list require the approval of the CEO of SunGard, while Comdisco allows up to 50% off with the approval of the regional VP.

## **3. Declaration and Utilization Fees**

Declaration and site utilization fees for SunGard services vary on the basis of the class of the configuration under consideration. In general, SunGard prices these fees in two classes: IBM 43XX and IBM 30XX. In addition to configuration class, fees for utilization of hot and cold sites vary by the number of days, and are subject to minimums based on the customer's contract. (See Chapter V). Exhibit IV-1 summarizes the declaration and utilization fees for SunGard.

## EXHIBIT IV-1

**SunGard's Declaration and Utilization Fees**

Fee Basis	Configuration	Fee
Declaration	43XX & Below 3083 & Up	\$10K One Time \$25K One Time
Hot-Site Utilization	43XX & Below 30XX	\$6K Per Day \$10-12K Per Day
Cold-Site Utilization	43XX & Below 30XX	\$500 Per Day \$1-2K Per Day

Comdisco's pricing for these services is comparable, although it does not make the distinction as a matter of pricing philosophy between large-scale and small-scale installations. Interview data from Comdisco indicates that in general "declaration fees" range between \$10,000 and \$40,000. Comdisco's comparable rates for hot-site usage are in the range of \$2K to \$15K per day.

One nuance of difference between SunGard and Comdisco on these fees is that Comdisco assesses the declaration fee upon official notification of the disaster by the client, whether the site is ever occupied or not. SunGard only assesses the fee if the site is actually occupied.

IBM's approach in the area of disaster declaration fees is quite different. In effect, IBM doesn't charge for declaration. Instead it utilizes a formula for calculating a significantly lower initiation fee based on the client's monthly DR service charge. This is a point being heavily utilized in IBM's marketing of the service.

**B****Configuration Pricing**

Configuration pricing for contract purposes is based on a monthly rate list price for the components to be used, and varies with the stated length of the contract. Both Comdisco and SunGard utilize a pricing matrix to establish the base list price, and INPUT believes that a similar approach is used by IBM. Although INPUT was unable to obtain the actual matrices used for pricing, SunGard has prices for several configurations representing the classes of systems of interest to HBCAC. The data on each configuration which follows is presented in tabular format with the following headings:



- *Description* —Gives the IBM designation for the hardware component being priced
- *Quantity (QTY)*—The number of units of the hardware component being priced for the configuration in question
- *Unit*—Gives the unit monthly price for components of the configuration. (These rates were in some cases obtained directly, and in other instances imputed by INPUT through analysis of the prices obtained for the complete set of configurations.)
- *Total* —Represents the extension of the number of units times the unit price

The data presented in the tables represents SunGard's pricing for a five (5)-year contract. For each year less than five, a 10% premium should be added to obtain the contract monthly list price. For example, the pricing for the 4341/81 and 9370 represented in Section 2 below would be 120% of the \$1810/month, or \$2172/month for a three-year contract.

INPUT was unable to determine whether Comdisco has written contracts for more than five years, but SunGard has written several. For purposes of estimating the list pricing for these contracts, a 3% reduction in monthly fees would be utilized for the duration of the contract for each incremental year.

Finally, per the agreement with HBCAC, INPUT has not attempted to provide prices for network backup in the calculation of these monthly rates. However, it is safe to assume that monthly fees for network backup would be approximately equivalent to those for mainline processing services, meaning that the typical contract would double in monthly revenue value.

### 1. IBM 4341/81 and 9370 Pricing

To INPUT's knowledge, neither SunGard nor Comdisco actually provide 9370 configurations. Customers wishing to back up these services are, in effect, actually run on a 43XX configuration. In any event, in SunGard's case, the same price would be charged for either configuration, as calculated in Exhibit IV-2.



## EXHIBIT IV-2

**IBM 4341/81 and 9370 Pricing**

Description	Quantity	\$/Unit/Mo.	Total
4341 Processor	1	700	700
Test Shifts	4	150	600
Disk 3380D (Gigs)	10	30	300
Tape 3420 (Drives)	3	20	60
Printer 3211	1	50	50
Local 3X74 Cluster	2	50	100
Total		\$1,810/Mo.	

It should be pointed out that the current pricing strategy for SunGard involves bundling two test shifts into the processor cost when presenting a proposal to the client. If that were the case in the example cited in Exhibit IV-2, the processor price would have risen to \$1,000/month and the test shift charge for the two incremental test shifts would have dropped to \$300/month.

**2. IBM 3083Q**

EXHIBIT IV-3

<b>IBM 3083Q Pricing</b>			
Description	Quantity	\$/Unit/Mo.	Total
3083Q Processor	1	900	900
Conditioned Shell	1	350	350
Test Shifts	6	50	900
Disk 3380D (Gigs)	30	30	900
Disk 3380K (Gigs)	20	30	600
Tape 3480 (Drives)	4	30	120
Printer 4248	1	100	100
Local 3X74 Cluster	2	50	100
Card Equipment	1	50	50
<b>Total</b>		<b>\$4,020/Mo.</b>	

**3. IBM 3081K**

EXHIBIT IV-4

**IBM 3081K Pricing**

Description	Quantity	\$/Unit/Mo.	Total
3081K Processor	1	500	1,500
Conditioned Shell	1	350	350
Test Shifts	6	150	900
Disk 3380D (Gigs)	30	30	900
Disk 3380K (Gigs)	20	30	600
Tape 3480 (Drives)	4	30	120
Printer 4248	1	100	100
Local 3X74 Cluster	2	50	100
Card Equipment	1	50	50
Total		\$4,620/Mo.	

**4. IBM 3090-120E**

EXHIBIT IV-5

<b>IBM 3090-120E Pricing</b>			
Description	Quantity	\$/Unit/Mo.	Total
3090-120E Processor	1	1,800	1,800
Conditioned Shell	1	350	350
Test Shifts*	6		
Disk 3380D (Gigs)	20	30	600
Disk 3380E (Gigs)	10	30	300
Disk 3380K (Gigs)	12	30	360
Tape 3420 (Drives)	2	20	40
Tape 3480 (Drives)	4	30	120
Printer 4248	1	100	100
Local 3X74 Cluster	1	50	50
Total		\$3,720/Mo.	

\* Note - 2 Test Shifts are bundled in the processor pricing.

**5. IBM 3090-150E**

SunGard at present does not offer recovery on "S" class machines. Exhibit IV-6 gives the pricing for the 150E utilizing the same distribution of tapes, disks and other peripheral services.



## EXHIBIT IV-6

**IBM 3090-150E Pricing**

Description	Quantity	\$/Unit/Mo.	Total
3090-150E Processor	1	2,700	2,700
Conditioned Shell	1	350	350
Test Shifts*	6		
Disk 3380D (Gigs)	20	30	600
Disk 3380E (Gigs)	10	30	300
Disk 3380K (Gigs)	12	30	360
Tape 3420 (Drives)	2	20	40
Tape 3480 (Drives)	4	30	120
Printer 4248	1	100	100
Local 3X74 Cluster	1	50	50
<b>Total</b>		<b>\$4,620/Mo.</b>	

\* Note - 2 Test Shifts are bundled in the processor pricing.

**C****Conclusions—Pricing**

Based on the configurations priced out as part of the study and other information gathered during the survey, it is possible to assemble at least a preliminary pricing matrix for calculating list prices for SunGard's IBM-based disaster recovery services. Exhibit IV-7 shows the pricing data available.

Coupling this information with the algorithmic approach of factoring the monthly price up by 10% for each year below the five-year contract term should provide a relatively straightforward method of determining list prices for almost any configuration desired. However, the key to determining real profitability is in understanding the discounting structure which is inherent in the business, as has already been stated.

## EXHIBIT IV-7

### Estimated Five-Year Contract Pricing Data SunGard

Component		Unit	Price/Mo. (\$)
Processor	3090-400E	-	7,000
Processor	3090-200E	-	3,800
Processor	3090-150E	-	2,700
Processor	3081G	-	1,500
Processor	3083J	-	900
Processor	4381	-	700
Disk	3380D	Gigs	20
Disk	3380E	Gigs	30
Disk	3380K	Gigs	30
Tape	3420	Drive	20
Tape	3480	Drive	30
Printer	4248	-	100
Printer	3800/Mod 1	-	400
Printer	3800/Mod 3	-	500

- Discounts of 30% are not uncommon in competitive situations.
- Comdisco, whose list prices range from 0 to 15% below SunGard's, has given bigger discounts than SunGard in recent years in its effort to gain market share.
- IBM has entered the game, and has been known in some instances to offer a "first year free" approach to build its business base for key accounts.

The pricing issue appears to be particularly critical during the start-up of new facilities. SunGard estimates that it takes about 40 to 50 accounts to break even on a new installation; 25 on the 308X class and 50 or higher for sizable 3090 installations. With a typical sales cycle of 6 to 9 months, a "jump-start" marketing and sales strategy is clearly required in a start-up situation.



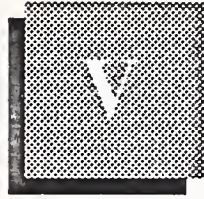




# Risk Management







# Risk Management

There are a number of potentially significant risks that are inherent to the large-scale IBM DR service business. It is interesting to note, however, that although the two vendors under study here both cited the same key areas of risk, they differed in their opinions on the threats posed by each. This chapter examines the three key elements of risk associated with the business, and discusses how SunGard and Comdisco deal with them.

## A

### Sources of Risk

Although interview respondents did not always describe the risk areas in the same terminology, INPUT has developed four major categories which clearly represent the industry's major concerns. They are as follows:

- *Recovery Capacity*—In short, this risk can best be described as having the capacity to deal with an individual disaster, or more likely with multiple disasters declared by clients using a common hot recovery site. As discussed earlier, site capacity is determined by all vendors by the ability to meet commitments to test-shift requirements.... not the ability to actually handle multiple clients approaching the site with simultaneous disasters.
- *Compatibility Divergence*—Although all vendors essentially require some level of annual testing by all clients, the risk always remains that some subtle change has been made in configurations or software which might derail the recovery process in the event of a real disaster. It is interesting to note that while DR service vendors are theoretically protected by contract from being held "at cause" in the event of a failure to recover in this type of situation, the concern is still high. In essence, whether legally protected or not, no DR service vendor would fare well under the bad press associated with an inability to recover, regardless of who was at fault.

Although this study did not focus on the topic, the growing role of telecommunications in the recovery process increases the risk in the area of compatibility.













- *Customer Preparedness*—Although the vendor of DR services is never legally responsible for the customer being prepared, customer incompetency is a significant concern for all vendors. The worst fears of both Comdisco and SunGard are that a customer will not make the investment and effort to be (and remain) adequately prepared to actually recover. Both feel that in the end, they would wind up holding the ball. If the result is a failed recovery, just as in the case of compatibility divergence the public relations effect could have devastating consequences for the vendor involved, as well as the industry in general.
- *Growing Competition*—In the beginning, there was SunGard. The entry and market share strategy of Comdisco has certainly had an impact on everything from pricing to investment strategies. Now IBM is on the scene. The net effect is that strategies for dealing with everything from marketing to deployment of recovery capabilities will have to be run more efficiently than they were during the early days of the business.




Not only is there growing competition for customers, but for people who can sell and manage the long-term account strategies that are required for success. Neither SunGard nor Comdisco are happy about current turnover rates, and non-compete clauses in employment contracts have had little effect on preventing crossovers between the two firms. A growing number of competitors will increase this exposure.

While all of these risks are of serious concern to most vendors, their rankings of the degree of risk tend to vary. In Exhibit V-1 INPUT presents its assessment of how SunGard, Comdisco and IBM tend to rank the risks. The data for SunGard and Comdisco was obtained directly from the interviews. The information regarding IBM is INPUT's interpretation based on discussions with IBM executives not directly involved in its DR service business.



## EXHIBIT V-1

Weighting of Risks			
Risk Area	SRS	CDRS	IBM
Recovery Capacity			
Compatibility Divergence			
Customer Preparedness			
Growing Competition			

 Strong Concern  
 Medium Concern  
 Light Concern

**B****Risk Containment Strategies**

There are a number of containment strategies that vendors are applying to deal with these risks. This section addresses these strategies, and gives INPUT's views on the fundamental changes in the business that might alter the nature of the exposure to risk.

**1. Recovery Capacity**

A number of approaches are being taken for dealing with the recovery capacity issue. The maximum exposure in terms of recovery capacity is only likely to occur in situations where multiple disasters are declared simultaneously at a single site. Contractually enforced subscriber testing virtually eliminates the threat that a given site would be unable to support a situation where one customer declares a disaster. The two primary methods of limiting this exposure are technological and contractual.

**a. Technology Solutions**

Both SunGard and Comdisco have made heavy investments in broadband communications, which allows them the opportunity to physically process the workload of a customer intended for one recovery site at another site, in the event that multiple disasters are declared in a local geographical area. In other words, the capacity issue is partially dealt with by load leveling across a number of networked hot sites. The factors working against the effectiveness of this strategy are:

- A customer may have locally installed equipment which would prevent the relocation of his particular workload to another networked hot site.
- The customer-owned/managed backup network cannot be switched or integrated into the alternate backup site.

There is little that can be done to overcome the first blocking factor. However, both companies are tackling the second by taking aggressive positions in supporting clients' network requirements with planning and providing network DR services. In effect, the more of the recovery network that the vendor can include in the DR service contract, the higher the probability that it can be effectively switched to accomplish the load leveling.

Other strategies which tend to reduce the risk of running out of capacity at a given site include:

- The creation of "critical mass" hot sites to cover the statistical contingency of multiple disaster scenarios. (Comdisco is currently in the process of switching from a strategy of many smaller hot sites to mega-sites, which it calls "computer recovery facilities." It is converting its former smaller hot-sites to disaster recovery centers which will operate through telecommunications links as hot sites. Comdisco claims that the fact that the hardware is in a mega-site will be transparent to the customer.)
- The utilization of very large processors in software-partitioned configurations to provide processing for multiple customers simultaneously at the same site
- The physical matrixing of all processors, DASD, I/O and telecommunications equipment at a given site, allowing physical reconfiguration of the hardware through switches to satisfy multiple customer needs
- Varying the ratio of subscribers per capacity unit at a given site, based on an assessment of the relative risk of multiple disasters. For example, Comdisco claims to have reduced the number of subscribers that it will allow at potentially high-risk sites, such as the San Ramon, California facility.

These technological approaches appear to be quite effective (at least in theory) in helping to reduce the risks associated with capacity problems generated by multiple disaster declarations.

#### **b. Contractual Considerations**

In addition to these technologically based approaches to handling the recovery capacity risk, all vendors attempt to cover themselves in their DR service contracts. As pointed out in Chapter III, Section D,

Comdisco's and SunGard's approaches vary, but each vendor does have a standard multiple disaster clause.

- In SunGard's case, site availability is guaranteed upon declaration of the disaster. However, the contract also states that in the event of multiple disasters impacting a single site, the site may have to be shared until additional CPUs and other equipment are installed.
- Comdisco also specifies immediate availability in its contract. However, in the event of multiple disaster declarations, Comdisco's standard contract controls site occupancy on a "first-come, first-served" basis. Presumably, in the event of multiple disasters, Comdisco would attempt to facilitate some sharing, but doesn't commit to it in the standard contract.

In some regards, the contractual approaches to reducing risk are limited when it comes to the capacity issue. However, the technological approaches discussed in Section *a* appear to be increasingly effective in reducing exposure in this area.

## **2. Compatibility Divergence**

The primary defense against exposure to this risk is to insure frequent testing on the part of the customer. This is accomplished by both Comdisco and SunGard by two approaches:

- Contract requirements including some minimum number of test shifts per year
- Investments on the part of the vendor in maintaining close relationships between account managers and their respective clients

Effective account managers for both Comdisco and SunGard attempt to stay abreast of systems and infrastructure plans of their clients. They remain alert to changes which might create incompatibility problems, and encourage testing if there is reason to believe that the changes going on in the customer's shop may create compatibility problems in a DR situation.

This close monitoring of accounts has an additional fringe benefit. As customers' shops add and rework applications, and ultimately hardware capacity, the window is opened for potential early renewals and increases in DR service contracted fees.

## **3. Customer Preparedness**

As is the case with compatibility divergence, the only effective way to deal with the risks associated with an ill-prepared customer is close account monitoring. In talking with at least one account manager who



has had problems with one or two of his accounts, it became apparent that the best defense is a good offense. Preparedness can be improved by:

- Selling or providing as an unpaid service access to consultants from the DR planning services side of the vendor's organization
- Providing extra test shifts at reduced fees

Contracts will normally protect the vendor in these situations from criminal or financial liability. However, if the customer is unable to recover, even though it was demonstrably his fault, the vendor will carry some of the guilt in the public eye.

#### 4. Growing Competition

The best defense against the growing competition is to attempt to differentiate the offering. Until recently, the business has been a two-company battle, where price has been the primary discriminating item. While SunGard's and Comdisco's strategies have varied slightly from one another, the differentiation hasn't been great.

The entry of IBM into the market will change the game. IBM has already garnered approximately 150 accounts with only one year in the business. In addition, it isn't playing by all the rules. Its approach to declaration fees and contracts is already different from that of the veteran players.

Exhibit V-2 summarizes the four primary risk areas and related containment strategies.

With the exception of the risk posed by growing competition, the primary risk both from a legal and public relations viewpoint is that a client will experience an unsuccessful recovery. Whether this failure is the result of inadequate capacity on the part of the DR service, or due to incompatibility or an inadequate level of preparedness on the part of the customer, the public relations effect could be disastrous.

From the point of view of both SunGard and Comdisco, contractual arrangements can be put in place which minimize legal and financial exposure in the event that failure is the customer's responsibility. The networking of DR centers and other technological developments can minimize the exposure on the capacity issue, even in the event of multiple disasters. However, only effective account management of DR service customers can minimize exposures which are really under control of the customer.



## EXHIBIT V-2

**Risks and Counter-Risk Strategies**

Risk	Counter Strategy
Recovery Capacity	<ol style="list-style-type: none"> <li>1. Critical Mass Sites</li> <li>2. Networked Hot Sites—Load Leveling</li> <li>3. Penetration of DR Network Services</li> <li>4. Software Partition Processors</li> <li>5. Physically Matrixed Sites</li> <li>6. Risk-Based Capacity Planning</li> <li>7. Multiple Disaster Contract Limitations</li> </ol>
Compatibility Divergence	<ol style="list-style-type: none"> <li>1. Required Test Shift</li> <li>2. Close Account Maintenance</li> </ol>
Customer Preparedness	<ol style="list-style-type: none"> <li>1. Provision of Planning Services</li> <li>2. Extra Test Shifts</li> <li>3. Close Account Maintenance</li> </ol>
Growing Competition	<ol style="list-style-type: none"> <li>1. Product Differentiation</li> </ol>

INPUT believes that both Comdisco and SunGard have serious enough concerns about the “ability to recover” issue that philosophically both companies stand ready to throw any resources necessary into a recovery situation that appears to be deteriorating. Although this subject was not discussed with IBM directly, its history of bailing out customers in disaster situations has been excellent, even prior to entering the DR services market... and IBM is already leveraging that history in the marketing of its DR services.

In the final analysis, INPUT believes that most of the risks associated with the customers’ demands for services are quite manageable. Certainly no situations have arisen to date which would indicate that the risks are disproportionately high. Even the recent events involving the California earthquake and the East Coast hurricane appear to have been handled well by both DR service customers and their vendors.

However, there is one risk on the supply side that warrants some discussion before concluding this chapter.

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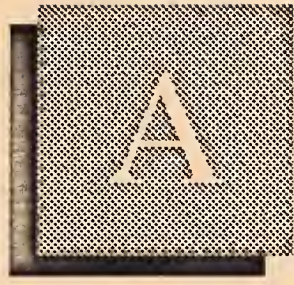
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**The Supply-Side Risk**

As cited earlier, a key strategy for all DR service vendors for dealing with the recovery capacity issue has been to utilize telecommunications in order to permit the construction of “critical mass” mega-centers capable of dealing with multiple simultaneous disaster declarations. The question is, what is the risk to the vendor if one of its mega-centers is struck by a disaster? At the least, the vendor’s ability to handle business as usual would be impaired. In a worst-case scenario, a disaster at the mega-center could occur in conjunction with a multiple disaster declaration on the part of customers. The only solution to this potential problem would be to develop a deployment strategy which balances the risks on the demand and supply sides.

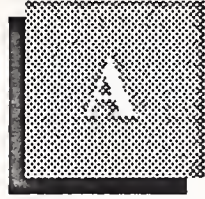
Although there is not enough data available to mathematically analyze the trade-offs involved in these decisions, INPUT believes that the protection against inadequate capacity in the event of multiple disaster declarations through the utilization of mega-centers generally outweighs the risks. The underlying assumption, of course, is that any new entrant into the business would be able to deploy two centers, electronically connected, at or near the start-up of the business.



# Appendix: Vendor Questionnaire







## Appendix A: Vendor Questionnaire

### HBCAC—Disaster Recovery Business Assessment

The objective of this questionnaire is to gain general information about DRS vendors' approach to business, pricing philosophy, market/clients and contract terms and conditions. A specific questionnaire has been designed to gather pricing information on various configurations.

#### 1.0 Background Information

- 1.1 How is the business organized? Number and location of DRS Centers (Hot Site Only). Typical configurations if possible? Marketing/sales structure, etc.?

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- 1.2 What is the client mix? By industry/by size? For example, what percentage of the clients are from banking and finance, insurance, discrete manufacturing, etc.?

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1.3 What products or services are offered? If possible, provide descriptive product information.

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1.4 What is the duration of the typical contract for DR services? What is the range of contract lengths?

Average: \_\_\_\_\_

Range: \_\_\_\_\_

If at all possible, the interviewer should attempt to get a copy of the annual report or financial statements, along with product literature wherever possible.

## 2.0 Markets/Penetration

2.1 What are your primary target markets?

Geographic: \_\_\_\_\_

Industry: \_\_\_\_\_

Product: \_\_\_\_\_

For the product category, we're trying to get information on each of the primary products or services described in question 1.3. If possible, we would like to have any information that would give the relevant importance to the respondent's business of those products.

2.2 What do you believe to be the target number of installations for IBM-based (not including AS/400) DR services in the United States and California in particular, and what do you believe to be your company's penetration?

Area	Number	Percent
U.S. Total		
California		

2.3 Do you believe this market is growing? If so, by what rate?

\_\_\_\_\_ Yes      \_\_\_\_\_ No      \_\_\_\_\_ %

2.4 Are you planning to add new products or services or expand existing product/service offerings within the next two years? If so, can you please describe?

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3.0 Pricing Philosophy/Strategies

3.1 Can you describe your firm's overall philosophy with regard to establishing pricing for "hot-site" disaster recovery services?

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To prompt a discussion in this area, there are a number of issues on which the interviewee should be questioned:

3.2 Do you establish prices on a national, local or regional level?

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3.3 Do you utilize a pricing matrix? If so, what kinds of parameters are critical to establishing the prices?

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3.4 What roles do length of contract, geography or other not configuration-specific characteristics play in establishing prices?

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3.5 Do you conduct regular pricing studies to determine how competitors charge for services?

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3.6 To what extent do “value-added” services weigh into your pricing strategy? What are those services?

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#### 4.0 Contract Considerations

4.1 Can you summarize the terms of the typical “hot-site” DR service contract with regard to each of the following topics:

Contract Duration: \_\_\_\_\_

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DR Service Activation: \_\_\_\_\_

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Site Occupancy: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Site Availability: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Limitations of Liability: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DR Testing: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Customer-Owned On-Premise Equipment: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## 5.0 Risk Management

5.1 What do you consider to be the primary areas of risk associated with offering disaster recovery services? Please list in order of priority, i.e., potential threat to the business.

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5.2 What strategies—contractual or technological—have you applied to the business to bring those risks to an acceptable level? (Please reference appropriate item from question 5.1.)

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## 6.0 Customer Considerations

6.1 What are the primary issues raised by customers when considering a contract for DR services?

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6.2 What is the typical time frame of the selling cycle?

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## 7.0 Competitive Opportunities

7.1 What are the primary competitive opportunities that are technology driven?

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7.2 What are the competitive opportunities from a geographical point of view?

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7.3 What are the competitive opportunities that are created by the market strategies of the other competitors in the business?

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*End of Questionnaire*





## Appendix: SunGard Vendor Profile



## COMPANY PROFILE

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### **SUNGARD DATA SYSTEMS INC.**

1285 Drummers Lane  
Wayne, PA 19087  
(215) 341-8700

James L. Mann, President and CEO  
Public Corporation, OTC  
Total Employees: 800  
Total Revenue, Fiscal Year End  
12/31/88: \$121,956,000

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### **The Company**

SunGard Data Systems Inc. provides disaster recovery services, primarily to users of IBM, Tandem, DEC and compatible mainframes. The company also provides remote processing services and disaster recovery consulting; and develops, markets, and supports proprietary application software systems for the financial services industry, including shareholder accounting, employee benefit reporting, portfolio management and accounting, trust accounting, and futures and options accounting.

- SunGard was formed from a group of Sun Company, Inc. information processing subsidiaries known as Sun Information Services (SIS). These Sun businesses were sold to certain SIS management personnel and a group of venture capitalists on January 10, 1983.
- SunGard operated as a private company (SunData Corporation) from its founding in 1976 through 1985. In March 1986 the company made an initial public offering of 2,668,000 shares of common stock. Of the shares offered, one million shares were sold by the company and 1.7 million shares were sold by shareholders. Net proceeds to the company of \$10 million were used to repay debt and for general corporate purposes, including working capital and expansion.
- On March 10, 1986, the name of the company was changed from SunData Corporation to SunGard Data Systems Inc.

SunGard's 1988 revenue reached \$122 million, a 34% increase over revenue of \$91.1 million for 1987. Net income increased 37% to \$11.2 million, compared with \$8.2 million in 1987. A five-year financial summary follows:

**SUNGARD DATA SYSTEMS INC.  
FIVE-YEAR FINANCIAL SUMMARY  
(\$ thousands, except per-share data)**

ITEM	FISCAL YEAR				
	1988	1987	1986	1985	1984
Revenue	\$121,956	\$91,118	\$69,053	\$58,586	\$52,768
• Percent increase from previous year	34%	32%	18%	(a) 11%	(a) 14%
Income (loss) before taxes and extraordinary item	18,473	\$13,876	\$10,436	\$6,570	\$3,397
• Percent increase from previous year	33%	33%	59%	93%	491%
Net income (loss)	11,224	\$8,215	\$5,490	\$3,812	\$2,787
• Percent increase from previous year	37%	50%	44%	37%	441%
Earnings (loss) per share	\$1.04	\$0.81	\$0.64	\$0.51	\$(0.19)
• Percent increase from previous year	28%	27%	25%	38%	295%

(a) Includes revenue from service lines sold during 1985.

Total revenue increased \$30.8 million from 1987 to 1988. Of that increase, \$19.6 million or 64% of the increase was new revenue from acquired businesses.

- Revenue from disaster recovery and related services increased \$15.7 million from 1987 to 1988. Of that increase, \$7.9 million was derived from acquired businesses. The remaining \$7.8 million increase in revenue was due primarily to increases in contracts, additional services sold to existing customers, and to a lesser extent, price increases.
- Revenue from investment management systems increased \$15.2 million from 1987 to 1988. Of that increase, \$11.8 million was derived from acquired businesses. The remaining \$3.4 million increase in revenue was due primarily to increased volumes for existing processing customers, offset by a decline in software license revenue from investment and shareholder systems.

Costs and expenses as a percent of revenue have remained relatively stable for SunGard over the past three years. A chart of costs and expenses as a percentage of revenue for the past three years follows:



**SUNGARD DATA SYSTEMS INC.  
THREE-YEAR COSTS AND EXPENSES  
(expressed as a percentage of revenue)**

	FISCAL YEAR		
ITEM	1988	1987	1986
• Cost of sales and direct operating	54%	56%	55%
• Sales, marketing, and administration	21%	21%	21%
• Product development	2%	2%	4%
• Depreciation and amortization	8%	6%	5%
TOTAL	85%	85%	85%

SunGard's strategy of entering new markets and expansion through acquisition has remained evident into 1989.

- SunGard has recently announced a proposed merger with Dyatron Corp. Dyatron Corp., a Birmingham (AL)-based financial software firm, has projected 1989 revenue of \$50 million.
- SunGard has announced that it plans to complete the acquisition of Money Management Systems, Inc. late in the second quarter of 1989. Money Management Systems, Inc. provides MONEY MARKET II™, a fixed-income securities trading and accounting system for banks and broker/dealers.
- In February 1989, SunGard issued approximately 250,000 shares of its common stock in a pooling-of-interests with Disaster Control, Inc., a Pennsylvania-based provider of disaster recovery services to users of Unisys Corporation's Burroughs mainframe computers.
- In June 1988, SunGard acquired EDP Security, Inc. based in Littleton (MA). EDP specializes in recovery planning for PC and minicomputer-based relational data bases. EDP employs 30 people and has over 1,600 clients worldwide.
- In December 1987, the company acquired Minneapolis-based Eloigne Corporation, a provider of disaster recovery services with a customer base of 50.

- In December 1987, SunGard made its biggest acquisition to date with its purchase of Devon Systems International, Inc. for \$20 million plus future contingent payments. Devon Systems provides software to large domestic and international banks for trading currency and interest rate options, futures, and swaps. SunGard estimates the potential market for these products at some 1,500 institutional trading rooms worldwide.
- Also in December 1987, SunGard purchased Uni-Coll Corporation, a Philadelphia computer service bureau, to add to SunGard's remote processing services.
- In June 1987, SunGard acquired Devlin Associates, a nationally recognized disaster planning firm. SunGard immediately merged HSH National and Devlin into one operating subsidiary called Harris Devlin Associates, Inc.

Early in 1989 SunGard entered into an agreement with STM Systems Corporation, a major Canadian computer services firm, to provide alternate site disaster recovery services in Canada.

SunGard is currently organized into nine operating groups as follows:

#### Disaster Recovery and Related Services:

- SunGard Recovery Services of Wayne (PA) offers disaster backup and recovery services for large-scale computer centers. The current CEO is Richard B. Aldridge.
- Harris Devlin Associates, Inc., located in Dublin (OH), is a provider of consulting and education for disaster planning.
- SunGard Computer Services, which shares office space with SunGard Recovery Services, is a provider of remote access IBM processing services for software developers. The current president is Michael K. Muratore.
- SunGard Central Computer Facility, located in Philadelphia, is a provider of remote processing services for customers of SunGard Computer Services, SunGard Shareholder Systems, and SunGard Investment Systems.
- EDP Security, Inc., based in Littleton (MA), offers a PC software product for disaster recovery planning.
- Disaster Control, Inc. is a supplier of disaster recovery services for Unisys Corporation's Burroughs mainframe computers.

### Investment Management Systems:

- SunGard Shareholder Systems Inc., located in San Mateo (CA), is a developer and processor of shareholder accounting systems for mutual funds, banks, and corporations. The current CEO is Dr. Phillip V. Manning.
- SunGard Investment Systems Inc., located in Hinsdale (IL), is a developer and processor of investment accounting systems for pension and benefit plans. The current president is Phillip L. Dowd.
- Wismer Associates, Inc., located in Canoga Park (CA), provides on-line portfolio management services for savings and loan associations, corporations, and governments. The current president is Dr. David A. Wismer.
- SunGard Trust Systems Inc., located in Charlotte (NC), is a provider of trust accounting and related services to banks. The current president is Robert F. Clarke.
- Devon Systems International, Inc., located in New York (NY), is a provider of integrated trading and accounting systems for derivative instruments to international money center banks. The current president is Gregory S. Bentley.

SunGard's main competitor in the disaster recovery area is Comdisco. The company also competes with numerous regional disaster recovery centers, but says these companies cannot compete on a national level and does not consider them a threat.

- IBM recently made an entry into the disaster recovery market, but neither industry analysts nor SunGard management see this as a threat.

### Key Products and Services

A three-year summary of source of revenue, as provided by SunGard Data, follows:



**SUNGARD DATA SYSTEMS INC.  
THREE-YEAR SOURCE OF REVENUE SUMMARY  
(\$ millions)**

	FISCAL YEAR					
	1988		1987		1986	
ITEM	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL	REVENUE \$	PERCENT OF TOTAL
Disaster recovery and related services	\$61.0	50%	\$44.6	49%	\$34.5	50%
Financial processing services and software	61.0	50%	46.5	51%	34.6	50%
Total	\$122.0	100%	\$91.1	100%	\$69.1	100%

Revenue from disaster recovery and related services increased by 27% in 1988 and 31% in 1987 due to acquired businesses, net increases in contracts, additional services sold to existing customers, and, to a lesser extent, price increases. Acquired businesses accounted for 50% of the disaster recovery growth in 1988, and 12% in 1987.

Revenue from investment management systems increased by 24% in 1988 and 33% in 1987. Acquired businesses accounted for 78% of the growth in 1988 and 18% in 1987. The increase in revenue for investment management systems is primarily attributable to acquired businesses. Additional increase in revenue was derived from increased volumes for existing processing customers.

Descriptions of SunGard's products and services separated by operating group are as follows:

**Disaster Recovery and Related Services:**

- SunGard Recovery Services
  - In 1987, SunGard claimed to have a 57% market share of disaster recovery services in the IBM 30XX market and only a 4% market share of the IBM 43XX market, whereas Comdisco, its main competitor, had a 37% and 58% share in the respective markets. The average annual fees derived from a disaster recovery contract for the 30XX and the 43XX processors are \$75,000 and \$24,000, respectively.



- The company currently has approximately 800 contracts serving over 300 customers located in 35 states and Canada.
  - The average contract for SunGard generates \$80,000 annually and increases at a rate of approximately 10% per year to accommodate client growth. Contracts are generally long-term (1 to 5 years). Eighty-five percent of the contracts are renewed.
  - SunGard operates six data centers in Philadelphia, Chicago, and San Diego.
  - In the event of a disaster, SunGard charges the customer a "notification fee" of between \$25,000 and \$50,000 to configure a system similar or identical to that of the customer and begin use of the data processing center; the customer is also charged on the basis of computer usage. The customer has available use of a "hot site" with a processor configuration similar or identical to his own. Should the customer require an extended stay (over six weeks), a "cold site" is available where computers may easily be installed and used by the customer.
  - Customers may access SunGard's processors for testing their backup procedures and for actual processing in the event of a disaster via System Network Access Points (SNAP), telecommunications centers strategically placed throughout the U.S.
  - In December 1986, SunGard had its first customer disaster. Putnam Companies had a fire in their data processing center and requested SunGard's aid. The backup and recovery was successful and received favorable press in a number of publications. In 1987, four more of SunGard's customers suffered from disasters. To date SunGard has successfully aided in six disaster recoveries.
  - In 1983 the Comptroller of Currency mandated that national and large commercial banks should maintain a feasible recovery plan in the event of a disaster, which led to an increase in contracts in the banking industry. Other clients include many of the largest Fortune 500 and Fortune 500 service companies.
- Harris Devlin Associates, Inc.
    - Harris Devlin provides disaster recovery consulting and updating services.

- SunGard Computer Services.
  - This operating group is responsible for leasing excess computer time at SunGard's data centers to software developers, and for providing list enhancement services.
- SunGard Central Computer Facility.
  - This group is responsible for specialized remote processing problems for customers of SunGard Computer Services, SunGard Shareholder Systems, and SunGard Investment Systems.
- EDP Security, Inc.
  - EDP Security, Inc. offers the DP/80 software product which guides users through risk analysis and aids them in developing a custom disaster recovery plan. Implementation and training is included with the package, and consulting is available to aid customers who have unique problems.
- Disaster Control, Inc.
  - Disaster Control, Inc. claims to be the largest supplier of disaster recovery services for Unisys Corporation's Burroughs mainframe computers.

#### Investment Management Systems:

- SunGard Shareholder Systems Inc.
  - Formerly Applied Financial Systems, SunGard Shareholder Systems offers two main products for shareholder accounting. Both products are available for in-house installation, or may be accessed through SunGard's remote data centers.
  - INVESTAR™ is a shareholder accounting system that supports the following funds: money market funds, tax free funds, equity or bond funds, series type funds, institutional funds with 12B-1 features, unit investment funds, and closed-end funds. Some of the important features of INVESTAR include: automated Letter of Intent and Rights of Accumulation accounting; on-line inquiry for response to shareholder questions; prospect tracking and customer retention analysis; daily and periodic management reporting; performance statistics regarding transaction processing; interface to

debit/credit card networks and services; year-end tax reporting; real-time inquiry reporting on all customer account information; periodic processing of fund-triggered activities; and interfaces to automated clearing houses, Fed Wire and Bank Wire, and automated teller machines. INVESTAR runs on IBM 434X, 303X, 308X, and compatible mainframes under MVS using IMS DB/DC and COBOL.

- SUNSTAR™ is an on-line shareholder accounting system that performs reporting and recordkeeping functions for stock and bond issues based on a common investor data base. SUNSTAR runs on IBM 434X, 303X, 308X, and compatible mainframes under MVS using IMS DB/DC and COBOL.
- SunGard Investment Systems Inc.
  - The Employee Benefit Reporting System (EMBERS<sup>®</sup>) is a family of individual systems that shares a common data base and file-building technique. When licensed as a software package, the EMBERS family sells for approximately \$150,000. There are currently 20 installations. Components of EMBERS are:
    - EMBERS/FSR (Financial Statement Reporting) produces accounting and investment performance reports, including consolidated reports for master trusts.
    - EMBERS/PAR (Plan Allocation Reporting) provides plan allocation schedules for items such as trade dating, income accrual, and multiple fund/plan relationships.
    - EMBERS/CFR (Collective Fund Reporting) is a support system that will maintain collective fund portfolios and provide unit valuations.
    - EMBERS/IPM (Investment Performance Measurement) is a comprehensive performance measurement system that includes trade date performance and income accruals for trust portfolios.
    - EMBERS/INC (Income Review and Reconciliation) provides distribution of interest and dividend income to trust clients. It computes asset positions of record and amount of income expected, then matches them against income posted, providing an audit trail for further research if needed.



- FUND ONE<sup>R</sup> is an on-line portfolio accounting system that tracks investment transactions for bank commingled funds, such as sales and purchases of investments, commission payments, and dividend, interest, and capital gain distributions. FUND ONE licenses for approximately \$100,000 and runs on IBM and compatible mainframes under OS/MFT, OS/MVT, OS/VS1 and DOS/VS, SVS, MVS, or VM and uses CICS as the teleprocessing monitor. FUND ONE has 25 installations to date. FUND ONE is also available as a remote processing service.
- PERF 4<sup>TM</sup> is a fourth-generation performance measurement system that measures the rate of return achieved by an investment manager and other pertinent investment performance information. PERF 4 license for about \$120,000 and has 20 in-house installations. PERF 4 runs on IBM 43XX series mainframes and targets the IBM PC for downloading of data.
- PLAN ONE is an employee benefit participant accounting system that will track the individual employees' accounts in any defined contribution plan. PLAN ONE licenses for \$350,000 and runs on IBM and compatible mainframes. There are currently six installations of PLAN ONE.
- MUTUAL FUND ONE is an on-line, real-time mutual fund portfolio accounting system with integrated general ledger functions. MUTUAL FUND ONE is available as a remote processing service or as an in-house software package. The package runs on IBM 30XX, 4300 series and compatible processors under MVS, VM, XA, and uses CICS as the teleprocessing monitor. The remote service is designed to communicate with IBM 3270 or equivalent terminals. The software package licenses for \$200,000. There are currently 12 installations.
- Wismer Associates, Inc.
  - SERIES 2<sup>TM</sup> is a portfolio management processing service designed for financial institutions.
  - MONEymax<sup>R</sup> is a portfolio management processing service designed for the public sector.
- SunGard Trust Systems Inc.
  - AUTO-TRUST/AT, is a remote batch personal trust accounting system. The service is accessed via IBM



terminals installed at trust departments. Features of AUTO-TRUST include: complete common trust fund accounting, pricing for all listed stocks and corporate and municipal bonds, automatic posting of security purchases to suspend accounts for payment versus delivery, collateral requirements reporting, complete tax lot accounting, federal and state tax ledgers, regulatory reports for FDIC and the Comptroller of Currency, and money market fund investments.

- Autofax/PR, is a processing service that provides accounting and participant record-keeping functions for the following types of employee benefit plans: profit sharing, money purchase pension, HR10 (single or master), ESOPS, TRASOPS, multiple investment, integrated plans, and thrift plans.
- AutoTrans is a remote batch-processing service that provides control of shareholder/bondholder recordkeeping. A full listing of shareholders/bondholders, including certificate numbers and number of shares or face value held, can be maintained. As transfers take place, old certificates are cancelled and new certificates issued.
- AutoPay is a remote batch service that provides trust departments with complete production capability for periodic and nonperiodic payments from savings plans, pension or profit sharing plans, and annuities. Included in the system are up to eight withholding elections, choice of remittance types, complete file maintenance capability, and alternate addresses, as well as a variety of payment options.
- AutoSave is an IRA, CD, and savings record keeping and reporting system designed for IBM Series 36 computers.
- Microtrust is a PC-based, on-line, real-time, menu-driven software package for trust accounting. Features of the system include applications for administrative functions, investment, and tax accounting. Microtrust software is priced at \$6,000.
- MicroTrans is a software package for stock and bond recordkeeping and transfer applications.
- Autofax/MPR is a standalone participant reporting system for employee benefits administration.

- Devon Systems International, Inc.
  - EMS Base Module is the system core of the Exposure Management System. It incorporates processing capabilities for exchange-traded options and futures, a report writer, and a daily general ledger.
  - EMS/OPT is an options pricing toolkit providing multiple analysis models to manage exposure in the currency and commodities options markets. EMS/OPT also has the ability to access historical price and volatility data bases to be used directly in the analysis.
  - EMS/IRP, or Interest Rate Protection Tools, provides pricing and management analysis support for managing exposures to money market rates.
  - EMS/FxP, or Foreign Exchange Trading Supplement, particularizes EMS to foreign exchange business by providing multi-currency capabilities and pricing, and back-office and accounting support specific to the foreign exchange market. EMS/FxP allows general ledger entries to be passed for interbank trades on either a single, dual or multi-currency basis, and maintains a comprehensive library of credit line formulas. EMS/FxP produces confirmations of trades using user-defined texts in English, German or French.
  - EMS/UA, or the User Authorization Module, provides an audit trail of transactions processed and allows managers to limit access to the system.
  - EMS/DF, or the Hedge Accounting Module, allows EMS to maintain records of deferred gains and losses, and to evaluate the effectiveness of hedges through a summary comparison.
  - EMS/FCM, or the Brokerage Module, supports the back-office, customer reporting and accounting processing requirements of brokerage activities. EMS features same-day generation of confirmations and statements, as well as real-time "equity watch" functions which monitor the client's position, margin and equity standing. Clients wishing to be placed on "explicit only" liquidation status can be designated as such.

- The EMS system runs on the following processors: IBM 43XX, 308X, 303X under VM/CMS or MVS/TSO; MicroVAX 3XXX or larger under VMS; IBM PS/2 Model 80-111 with Quarterdeck QEMM/386; and Compaq 386/20.

### Industry Markets

Approximately 70% of SunGard's 1988 revenue was derived from the banking and finance industry. The remainder of revenue comes from clients in insurance, manufacturing, distribution, and utilities.

### Geographic Markets

INPUT estimates that approximately 95% of SunGard's 1988 revenue was derived from the U.S. and 5% from Canada.

SunGard divisions and subsidiaries are located as follows:

- SunGard Recovery Services Wayne, PA
- Harris Devlin Associates, Inc. Dublin, OH
- Disaster Control, Inc. PA
- EDP Security, Inc. Littleton, MA
- SunGard Computer Services Wayne, PA
- SunGard Central Computer Facility Philadelphia, PA
- SunGard Investment Systems Inc. Hinsdale, IL
- SunGard Shareholder Systems Inc. San Mateo, CA
- SunGard Trust Systems Inc. Charlotte, NC
- Devon Systems International, Inc. New York, NY
- Wismer Associates, Inc. Canoga Park, CA

### Computer Hardware and Software

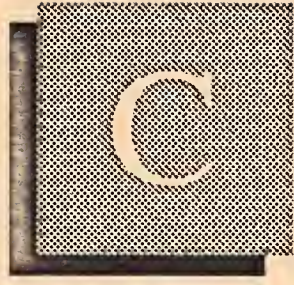
SunGard currently operates data centers in Philadelphia, Chicago, and San Diego, consisting of six hot sites and five cold sites, as follows:

- Philadelphia has three hot sites and two cold sites operating on the following processors:



- 1 DEC VAX 8800
  - 1 Tandem PXP
  - 1 IBM 3090 400 E
  - 1 IBM 3081 GX
  - 1 IBM 3090 200 E
- 
- Chicago has two hot sites and two cold sites operating on the following processors:
    - 1 Tandem VLX
    - 1 IBM 3090 200 E
    - 1 IBM 3081 G
    - 1 IBM 3090 400 E
- 
- San Diego has one hot site and one cold site operating on the following processors:
    - 1 IBM 3081 K
    - 1 IBM 3090 200 E





## Appendix: Comdisco Vendor Profile





## COMPANY PROFILE

### COMDISCO DISASTER RECOVERY SERVICES, INC.

6400 Shafer Court  
Rosemont, IL 60018  
(312) 698-3000

Raymond R. Hipp, President  
Wholly Owned Subsidiary of  
Comdisco, Inc.  
Total Employees: 300  
Total Revenue, Fiscal Year End  
9/30/88: \$55,500,000

### The Company

Comdisco Disaster Recovery Services, Inc. (CDRS), founded in 1980, provides disaster recovery processing and associated consulting services to subscribers in the U.S., Canada, and the U.K.

- CDRS' parent, Comdisco, Inc., leases and remarkets IBM computers and other high technology equipment. Comdisco had revenue of \$1.3 billion and net income of \$17 million for fiscal 1988.

CDRS' fiscal 1988 revenue reached \$55.5 million, a 41% increase over fiscal 1987 revenue of \$39.3 million. Pre-tax earnings rose 18%, from \$10.1 million in fiscal 1987 to \$11.9 million in fiscal 1988. A five-year financial summary follows:

#### COMDISCO DISASTER RECOVERY SERVICES, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ millions)

ITEM	FISCAL YEAR				
	9/88	9/87	9/86	9/85	9/84
Revenue	\$55.5	\$39.3	\$27.9	\$18.6	\$11.6
• Percent increase from previous year	41%	41%	50%	60%	78%
Income (loss) before taxes	\$11.9	\$10.1	\$6.3	\$1.7	\$(2.0)
• Percent increase from previous year	18%	60%	271%	185%	31%

CDRS management attributes the company's revenue growth primarily to the growth in its customer base and services offered.

Recent acquisitions include the following:

- In August 1988, CDRS announced the acquisition of Computer Recovery Facility, Inc. (CRF) of Toronto (Canada). The acquisition provides CDRS with its first Canadian "hot" site to serve existing CDRS Canadian customers, as well as more than 80 Canadian customers from CRF. The CRF site also provides CDRS with disaster recovery capabilities for Unisys equipment.
- In August 1988, CDRS acquired Manufacturers Hanover Data Services Corp. (MHDSC) from Manufacturers Hanover Bank of New York. Terms of the purchase were not disclosed.
  - MHDSC, with approximately 30 employees, provided backup services to Manufacturers Hanover Bank. It now operates as Comdisco Computing Services Corporation (CCSC), a wholly owned subsidiary of CDRS based in Carlstadt (NJ), overseeing CDRS' new electronic vaulting services.
  - CCSC also has a four-year contract to continue backup services for Manufacturers Hanover Bank.
- In June 1988, CDRS acquired Recovery Operation Centres Limited (ROC) for approximately \$7.5 million.
  - ROC is a U.K.-based firm that provides disaster recovery services to over 450 clients located throughout Great Britain.
  - ROC also has the original design for a mobile computer recovery center, which is now marketed by CDRS as COMROC (Comdisco Mobile Recovery Operations Center).
  - CDRS plans to use ROC as a base for its entry into the U.K. "hot" site market.

As of September 30, 1988 CDRS had approximately 300 employees, compared to 125 employees as of September 1987.

CDRS' primary competitor is SunGard Recovery Services (a unit of SunGard Data Systems Inc.)

#### Key Products and Services

One hundred percent of CDRS' fiscal 1988 revenue was derived from disaster recovery subscriptions and associated consulting services.

CDRS offers disaster recovery services through nine recovery



centers located throughout the U.S., Canada, and the U.K. with 17 fully configured "hot" sites and 13 shells or "cold" sites.

- "Hot" sites are fully-equipped computer facilities that include central processors, peripherals, and communications equipment.
  - During fiscal 1987 CDRS added IBM 3090-400E mainframes, 3380E DASD, and 3480 tape drive systems to its recovery centers. Teleprocessing capabilities were expanded by adding Hughes Communications satellite technology.
  - During fiscal 1988 CDRS opened new hot sites in Atlanta and New Jersey, and a hot site in Canada was acquired with Computer Recovery Facility, Inc. In October 1988, CDRS opened an additional hot site in southern California.
  - Out of the 16 hot site locations in the U.S., 13 received more advanced or upgraded computers during 1988.
  - CDRS is also doubling its Tandem backup capability, expanding its DEC backup facilities from one to three sites, and providing IBM System 38 backup capability.
  - Currently, CDRS is conducting a customer requirements survey to determine customer needs before installing an IBM AS/400 computer.
- A "cold" site or "shell" contains all the power, environmental, and support equipment, as well as the communications and networking equipment required for a large computer, but has no actual computer equipment.

The number of subscribers in the U.S. and Canada has increased from over 200 in fiscal 1983 to over 1,000 in fiscal 1988. During fiscal 1988, the number of subscribers increased by approximately 30% and three hot sites were added. A three-year summary of the number of subscribers and facilities provided by CDRS follows:

ITEM	9/88	9/87	9/86
Subscribers	+ 1,000	+ 700	+ 600
Hot sites	16	13	11
Shells	13	14	14

- The company currently has 17 hot sites and approximately 1,500 subscribers (including clients of businesses acquired during 1988).

New products/services announced by CDRS during fiscal 1988 include the following:

- CDRS' newest service, electronic vaulting, is an enhanced backup recovery capability targeted to customers that record and process their transactions on-line. Examples of these types of customers include banks, brokerage houses, and retail chains.
  - Transactions recorded at a customer's data center are simultaneously recorded at a CDRS site, eliminating the need to physically transport backup tapes.
  - The service involves direct communications under IBM's SNA and VTAM between the customer's mainframe and a dedicated host at CDRS' hot site in Carlstadt (NJ).
- CDRS now offers a network of fixed and mobile satellite earth stations which can bypass telephone control office switching equipment in the event of a disaster.
- CDRS' COMROC mobile computer recovery center is an alternative shell solution for the convenience of the customer. Instead of occupying a shell at a CDRS site, CDRS will build a computer recovery center at the customer's site in a parking lot, in a field, or on any available real estate, within a week of a disaster.
- ComPAS is a disaster recovery software product that uses artificial intelligence and expert system technology to assist customers in developing, testing, and maintaining a full recovery capability tied to their specific industry and business environment.

Other CDRS services include the following:

- Comdisco Remote Testing, which was implemented nationally during fiscal 1987, provides customers access to CDRS recovery centers from their headquarters via a 3270 CRT cluster or a microcomputer.
- Through Comdisco Disaster Recovery Contingency Services, CDRS provides consulting services to prospective and existing subscribers on how to set up recovery plans.

**Industry Markets**

CDRS' revenue is derived from clients in various industries, including retail, banking and finance, and manufacturing.

Clients for CDRS' services include Household International, A.M. Castle & Company, and CECO Corporation.

**Geographic Markets**

CDRS' revenue is derived from the U.S., Canada, and the U.K.

Recovery centers are located in Cypress and San Ramon (CA), Atlanta (GA), Wood Dale (IL), Indianapolis (IN), St. Louis (MO), Bridgeport and Grand Prairie (TX), Carlstadt and North Bergen (NJ), and Montreal and Toronto (Canada).

CDRS is planning to establish operations in Germany and France during fiscal 1989 and has begun exploring the Japanese market.

**Computer Hardware and Software**

CDRS hot sites are equipped with various IBM systems (including IBM 3090-400E computers), as well as DEC VAX, Tandem, and Unisys systems.







